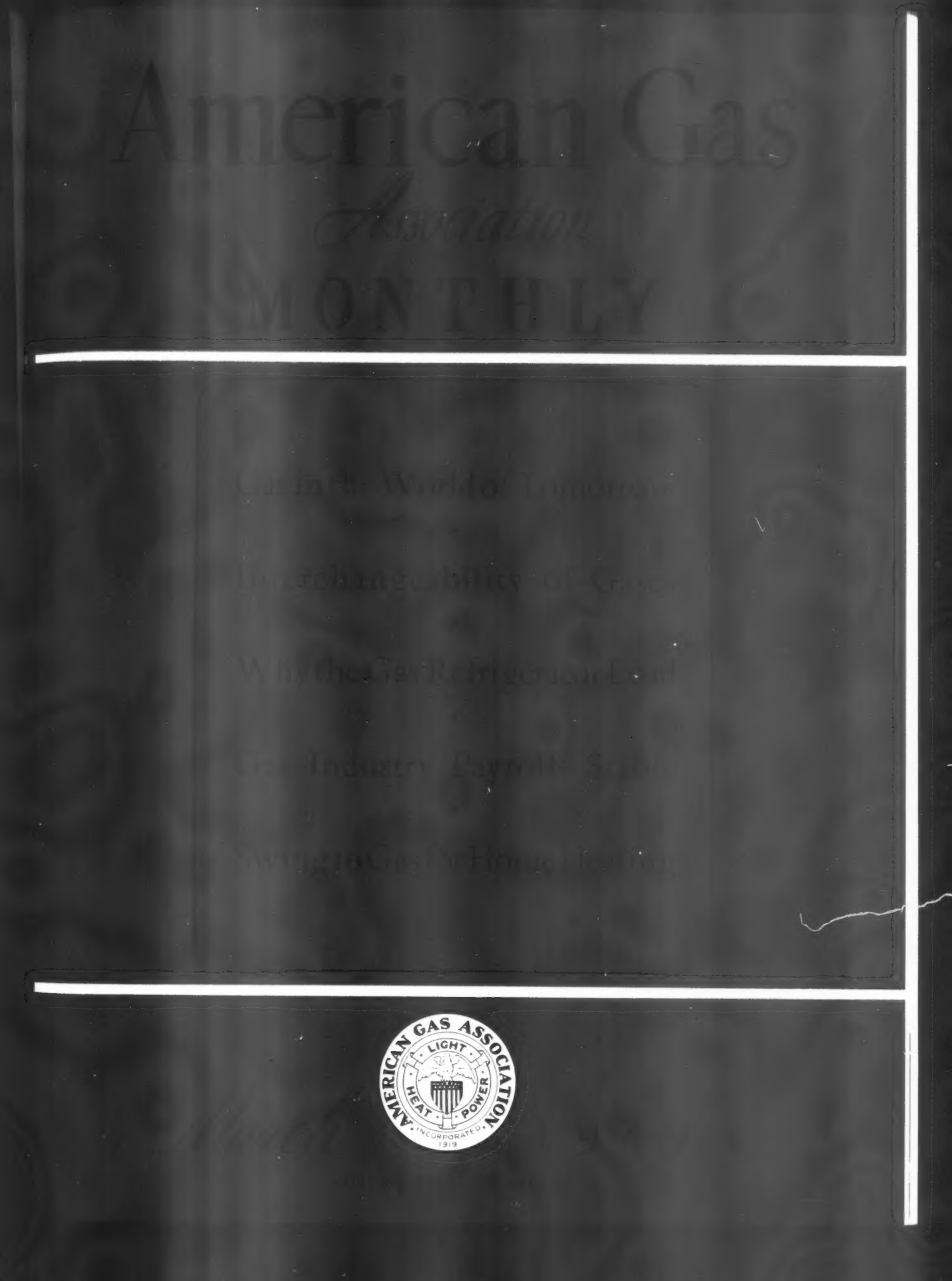
American Gas
Association
MONTHLY

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Gas company executives everywhere recognize that new conditions create new problems. Markets for gas services now extend lower in the income scale. Competition is increasingly active. Improved appliances greatly enlarge sales opportunities.

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Commercial Section

AMERICAN GAS ASSOCIATION

420 Lexington Avenue
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American Gas Association MONTHLY

CONTENTS FOR MARCH 1939

Here's a preview of the gas industry's part in the forthcoming New York World's Fair which opens in April. And it's a major role the industry will play. Spectacular, inspiring, yes, even colossal, is the story of gas at the Fair. . . . Did you know that the gas industry shows remarkable stability in employment and payrolls when compared with other industries? Also, that the average worker in the gas industry has much greater investment behind him than the average steel, railroad, or automobile worker? President Lauer cites these and other significant facts in an enlightening article. . . . Important data on the interchangeability of city gases are contained in Mr. Conner's summary of the work of the Laboratories on this subject. . . . With remarkable clarity, R. J. Rutherford discusses the refrigeration load from the angles of profit, permanency and service costs and he doesn't mince words. . . . While Mr. Schaul, chairman of the House Heating and Air Conditioning Committee, says there is no magic wand to assure success in selling gas heating to new homes, he has some pertinent suggestions to offer—and they are based on successful experience.

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JAMES M. BEALL, *Editor*

THE DRAMA OF GAS
. . . Unfolds in the "World of Tomorrow"

By HUGH H. CUTHRELL

President, Gas Exhibits, Inc.

THE world is waiting for the New York World's Fair—and the Fair is waiting to tell the world one of the greatest stories that has ever been told. It is a story of magnificent achievement and millions will hear it.

From every state in the nation; from every nation in the globe, they will converge in little more than a month now, at the international spot of the hour: World's Fair, New York.

Here, where one of the most remarkable "face lifting" acts ever performed has transformed a waste swamp land into 1939 streamline sophistication and splendor, they will see spread out before them the "biography" and the prophecy of American life.

American commerce, industry, science, and government will cite their contributions to the World of Today; demonstrate their promise for the World of Tomorrow.

✣

A total of 60,000,000 people will be on hand, over the period of the Fair's duration, to see, hear and heed that world as it lies before them, on the 1200-acre tract of Flushing Meadow Park. That is the estimated total attendance for the 180 days the exposition will be open.

It's a 150-million dollar show (buildings, grounds, exhibits and permanent improvements). Naturally, there's plenty of competition among the exhibitors. Friendly competition, but keen! It's the biggest audience they've ever had,—and they have no intention of letting any rival get ahead of them—rain or Fair!

New York has always been a mecca for the sightseer and the tourist. New York plus the New York World's Fair make one of the biggest box-office attractions this country has ever had. And the industries of this country are doing things about it!

They have gone into action on a big, often breath-taking scale. They've engaged the best in money, brains and brawn to tell a story that will ring 'round the world.

No more inspiring, spectacular exhibit has been prepared than the million-dollar "Court of Flame" exhibit group of the nation's gas industry.

It represents the combined effort of every unit in the industry, working together as an integral part of modern living, and a vital factor in the world of tomorrow.

It will bring before the millions who are to visit the Fair from all points of the globe, the true story of gas: its drama, its science, its practical application in the home, and in industry.

✣

Progressive, thinking men of the gas industry were quick to recognize, from the very first, the unprecedented opportunity which the Fair offers—an opportunity which may not come again for many a generation. And so they set to work to put on a "show" that will make people stop, look and listen. It will.

This has been made possible, not only by the cooperation of the various gas companies throughout the country, but by the formal organization of Gas Exhibits, Incorporated, a non-profit, co-operative enterprise. It was formed on June 25, 1937, for the specific purpose of planning, coordinating and conducting the gas industry's participation in the New York exposition. The industry's leaders realized that the task of organizing, financing and conducting a display sufficiently distinguished to represent this giant industry was too tremendous an undertaking for any one unit to attempt. Gas Exhibits, Incorporated, was the result.

The next physical step in the industry's participation took place on November 1, 1937, when leading news-

t left—Thousands of buildings created to exact scale with mated features will depict the gas, electric and steam serv- of the Consolidated Edison Co. of New York at the Fair.

Over-all view of the New York World's Fair with the Manhattan skyline in the background

papers gave wide publicity to our "Court of Flame" exhibit, as disclosed by the World's Fair authorities.

On January 18, 1938, Gas Exhibits, Incorporated, again took the limelight as the first private exhibitor to break ground at the Fair site. This marked "the first physical step in the participation of American business and industry in the World's Fair."

Now with the World's Fair but a few weeks off, the "Court of Flame" exhibit stands, a stunning sentinel in the Home and Shelter Section of the Fair grounds.

Gas Dominates Fair

No more interesting, important exhibit exists at the Fair, architecturally, educationally, and every other way! Gas Exhibits, Incorporated, has engaged the best talent in and out of the industry to conceive and execute a display worthy of the industry. The brightest minds in the fields of design, architecture, and publicity have been recruited to paint a picture that will imprint itself indelibly on the minds and memories of millions. It will be a major victory in showmanship and salesmanship. It will be . . . . a "show of shows!"

But it is not only in its own exhibit that the gas industry is scoring such a signal success. Throughout the Fair, GAS WILL BE DOMINANT! In the words of an official commentator, "Gas will dominate the New York World's Fair of 1939 as it has never dominated any previous exposition."

It is the result of powerful enterprise on the part of the industry. All the while it was formulating plans for the manner of its participation in the Fair, it was also busy demonstrating to those responsible for the development and management of the exposition the superiority of gas fuel in building the world of tomorrow.

In the face of keen competition, the gas industry won outstanding success. Less than six months after the breaking of ground at Flushing Meadows, gas service was installed in the first Fair building erected. Similar triumphs followed, one after another, and on October 26, 1937, the greatest victory of all was scored: The World's Fair Corporation signed a contract for the exclusive use of gas for space heating, water heating and cooking, in all of the permanent buildings which will remain when Flushing Meadow Park supercedes the international exposition.

Nor is this the extent of the victory. Numerous commercial and industrial firms have chosen gas as the outstanding fuel, and it will service their exhibit buildings at the Fair.

Gas Street Lighting

Gas is also being used for street lighting, for illumination, and for spectacular purposes at the Fair. Many of the Fair's boulevards will be lined by rows of decorative gas-burning lamps. Vivid gas torches will spiral wide yellow ribbons of flame in decorative design at various points. Artistic "flambeaux" on the order of the Olympian urns of ancient Greece will pattern the sky with gas flame of unusual design. New fields of use for gas are expected to grow out of this spectacular and decorative use of gas at the exposition.

This new utilization at the Fair has definitely demonstrated the versatility of gas and will be most effectively seen in the stupendous spectacle to be staged at the Lagoon of Nations.

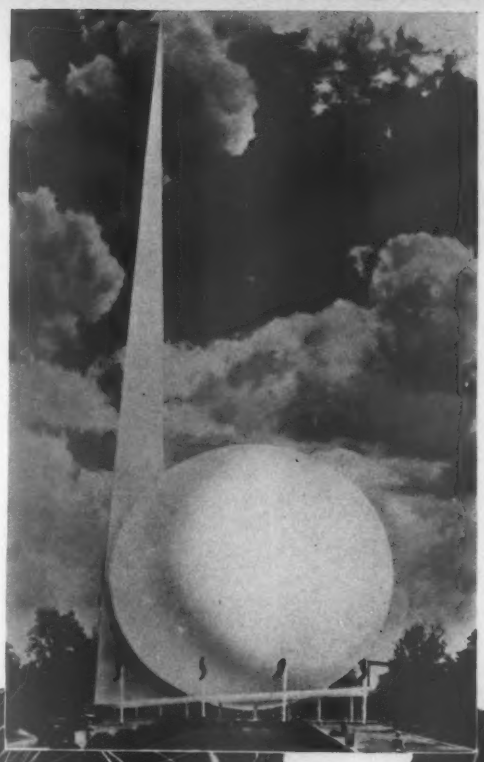
Gas will play the role of Fire in the Battle of Creation to be waged nightly. For this "inferno of fire, water, color, sound and fireworks," gas burners, which can be ignited under water, have been especially designed. They will send up columns of

Artist's sketch of $350,000 Music Hall

flame 150 feet into the air, and will withstand the force of fifty tons of water thundering down at one time. A total of 800,000 to 1,000,000 cubic feet of gas will be used per hour in the Lagoon spectacle.

The pre-opening consumption of gas at the World's Fair has been roughly estimated to be at least 100,000,000 cubic feet. During the course of the Fair, it is figured that twice as much gas will be used as at the Chicago Century of Progress.

To meet past, present and future demands for gas at the New York exposition, two miles of 12-inch main were laid outside the Fair Grounds by the local gas companies; also ten miles of main, and three miles of service pipe, inside the grounds.



Spectacle of fire and water with fountain jets and towers of flame rising 150 feet above the pool. Hundreds of gas burners devised for ignition under water as well as a thousand water nozzles and other equipment are required for this scene

So much for gas in general,—at the Fair.

Now for gas in the gas industry's exhibit . . . . at the "Court of Flame."

This exhibit is something the industry itself, as well as those outside of it, will talk about long after the Fair is A Memory,—and a momentum.

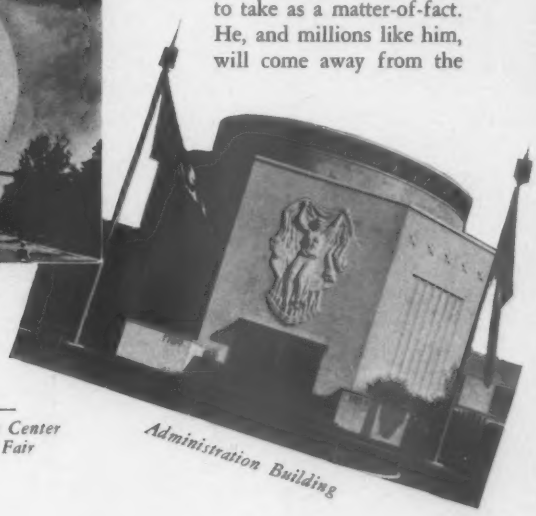
It is spectacular, and it is specific. It represents the romance, as well as the reality of one of the nation's most basic factors: controlled heat and cold. It symbolizes the same courage and aggressive spirit which has characterized the gas industry throughout its entire history.

Here in letters of living, literal flame, will be written the story of gas: What it is; where it comes from; what it does in the world of today; what it is destined to do in the "World of Tomorrow."

Here, in graphic demonstrations and displays will be dramatized the epoch-making discoveries and inventions upon which the gas industry has been dependent for scientific development.

And here, above all,—in live, action exhibits of gas appliances and equipment, will be demonstrated the practical application of this fuel to daily living.

The miracle of today is the commonplace of tomorrow. . . . . The gas exhibit will bring to the layman a new, more intelligent understanding of the modern miracle, gas, which he has come to take as a matter-of-fact. He, and millions like him, will come away from the "Court of Flame" with a profound feeling that gas is the fuel of today—and tomorrow! A fuel for all time . . . . for all uses.



Above—Theme Center of the Fair

Administration Building

The focal point and main entrance to the gas industry's exhibit will be the majestic "Court of Flame." It is, without doubt, one of the most thrilling sights on the Fair horizon. It has been called "a triumph in modern expositional architecture," and rightly so.

In the center of the "Court," resting on one of its corners, a ten-foot cube of glass will catapult a gigantic, perpetually burning flame

Model of the $3,000,000 Federal area

Discussing plans for the All-Gas Good Housekeeping model home. Left to right: Hugh H. Cuthrell, president, Gas Exhibits, Inc.; Helen Koues, director, Good Housekeeping Studio; Dwight James Baum, designer of the home; Louis Skidmore, of firm of Skidmore & Owings, John Moss associate, architects for Gas Exhibits, Inc.

high into the air: symbol of the leaping power on which the gas industry has been built. Surrounding this central motif will be four 90-foot pylons, swathed in sheets of flame.

Scientific Background of Gas

At the base of the glass cube, and grouped around the pylons, dramatic displays and models will illustrate the scientific background of gas, such as manufacture, refinement, storage and distribution,—the processes that make possible the various utilizations of gas fuel. Here, in fascinating fashion, will be revealed to the man-in-the-street (and the lady-in-the-home!) a host of fascinating facts behind the familiar gas flame; also, practical and specific information on gas heating, gas cooking, refrigeration and air-conditioning.

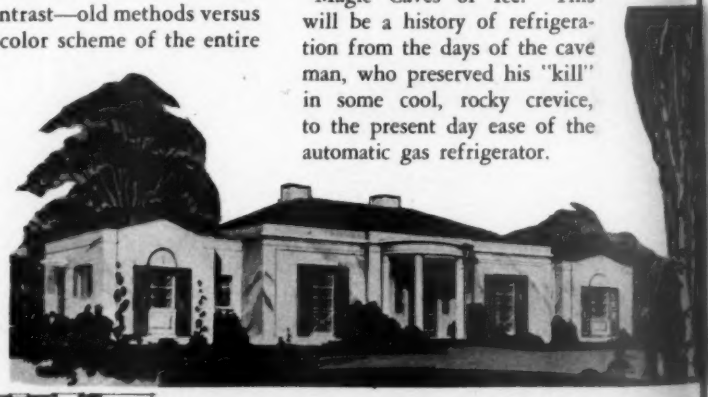
Adjoining the "Court of Flame," on one side, will be the main exhibit area, where manufacturers of every conceivable type of gas appliance will display their products. There'll be nothing cut and dried about this exhibit. It will be a living, moving, operating display that will do everything but talk! There'll be turntables, push buttons, moving slides, moving pictures, model kitchens and basements you can step down into, and step out of! (after you've examined them!) Cross-section exhibits, showing the mechanism of the products, will be prominent, and lavish use will be made of the medium of contrast—old methods versus new. The color scheme of the entire exhibition hall will be, very appropriately, red, white and blue. To prevent the exhibits from being a "hodge podge," definite color zones have been assigned to definite displays.

While individual exhibitors who take space are installing their own displays, there will be a continuity of design and decoration running throughout the entire building. Thus, the close association of *all* the many services offered by the industry will be emphasized, rather than any *one* particular product.

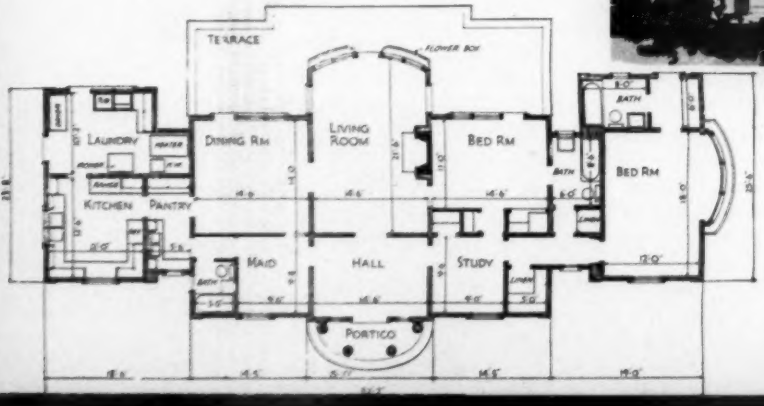
Appliances in Natural Settings

Appliances will be shown functioning in natural settings. Kitchen appliances will be shown in reproductions of modern kitchens. Heaters, and air-conditioning mechanisms, will be exhibited in model basements or cellars, their usual emplacement in homes. The consumer will see the things he uses, in actual operation, and he will see for himself their beauty, their simplicity, their flexibility and economy. It will be a first-hand action story, more convincing than reams of words written on the subject. One of the many colorful exhibits planned by manufacturers is that one in which glass will be made to simulate flame. This glass "flame" will be ten feet high, and will be everchanging in color.

An eye-opening exhibit in the exhibition hall will be known as the "Magic Caves of Ice." This will be a history of refrigeration from the days of the cave man, who preserved his "kill" in some cool, rocky crevice, to the present day ease of the automatic gas refrigerator.



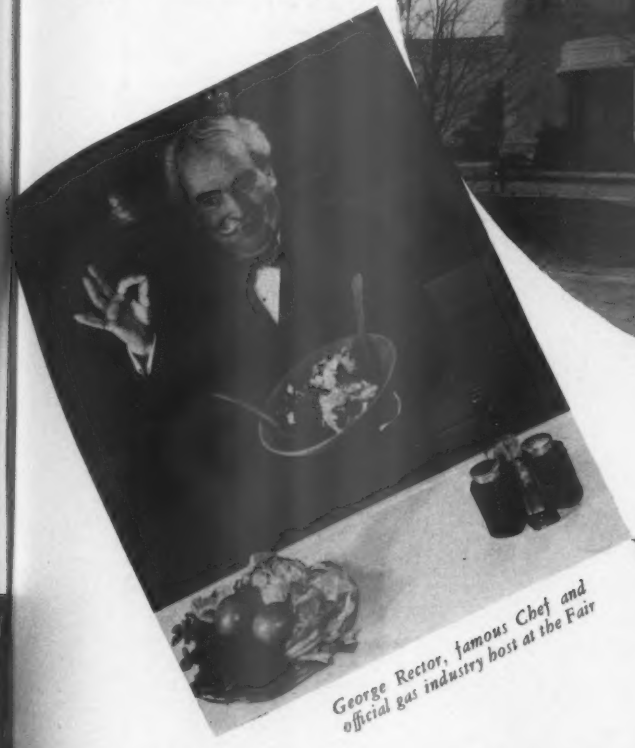
Architect's drawing of All-Gas Good Housekeeping Home which will be fully equipped with the most up-to-date gas appliances for cooking, heating, lighting, and cooling



Floor plan of the model home

The "Magic Caves of Ice," the exhibit of Servel, Inc., has been so planned that visitors to the Fair will feel that they are actual witnesses of the progress in refrigeration that has taken place during the ages. Immediately upon entering the exhibit the visitor will find himself surrounded by the strange icicle-like formations that took place during the Ice Age, millions of years ago. There will be the long tapering or cylindrical forms which the geologists call "stalactites" hanging from the roof of the cave meeting the "stalagmites," another type of geological formation, rising in fantastic shapes from the cavern floor.

The Gas Industries Building



George Rector, famous Chef and official gas industry host at the Fair

Partial sketch of "Magic Caves of Ice" which will feature gas refrigeration

A sense of coolness like that which one may imagine existed in the ice caves before the dawn of history will greet the visitor as soon as he enters the exhibit. This coolness of the "Magic Caves of Ice" to be furnished by the air-cooling department of Servel, Inc., will be particularly welcome during the hot summer months of the Fair.

The lighting will be so arranged that the first effect will be that of dimness, but soon the visitor, as he proceeds, will find an opening in the cavern walls which will disclose the midnight sky brilliant with stars. Further on he will behold the Aurora Borealis in all its splendour throwing its mysterious luminous glow over the frozen Arctic regions in the foreground. Other scenes will include two frozen lakes and a frozen waterfall.

In the center of the exhibit a giant refrigerator, about 12 feet high, moving constantly on a turntable, will be seen again and again, as the visitor goes from point to point through the cave.

Ten dioramas will constitute an important feature of the "Magic Caves of Ice" exhibit. From the standpoint of drama and picturesqueness they will embody a high degree of artistry, and they will also show in a graphic and pointed manner how domestic refrigeration began in prehistoric times, and how it

was developed from a primitive stage into that ultimate superiority that is embodied in the present day product.

The series of dioramic displays will begin with the "cave man" and his "kill" which he placed in the deep recesses of his cave where cool currents of air kept his food from spoiling for a short time; then Cleopatra's wine bearers will be shown, where films of ice formed by the desert night winds were used to cool the beverages and other delicacies served by Egypt's glamourous queen; the Roman emperor Caligula's barge with slaves bringing ice and snow from the far-off Apennines will be the next scene; further along in history, a well-house of Pilgrims in Massachusetts, will show the partial protection of food in those days; a scene showing the harvesting of ice in Winter will illustrate an early phase of refrigeration in the 19th Century, and then there will be a dramatization of a famous Gibson drawing entitled "The Gibson Girl and the Ice Man." This will show how the girl hated the "messiness" of the old-fashioned ice box.

The beginnings of electrical refrigeration are shown in a scene where an early electrically-operated refrigerator manufactured by Servel, Inc., a pioneer in automatic refrigeration, has the motor in the basement of the dwelling. Diorama No. 8, will show the all-gas kitchen of today, with its automatic refrigerator as an integral part of its furnishings; a farm kitchen, furnished with the kerosene-operated refrigerator, is the subject of Diorama No. 9. The final scene is a gas company salesroom in which a prospective customer is being told by a salesman of the merits of gas refrigerator models on display. The entire exhibit will occupy a space frontage of 60 feet, and a depth of 30 feet near the front entrance of the "Court of Flame" building.

The exhibits in toto, as assembled in the exhibition hall, strikingly symbolize the rise of man from primitive living to the ease and freedom of today. Civilization progresses with its control of cooking fuel, and as man rises above the mere existence of keeping warm and fed, life on a higher scale takes place.

Nowhere will the praises of gas be sung more lustily than in the "all-gas" home which stands in a tree-shaded patio close to the "Court of Flame."

All-Gas Model Home

This model home, which is to be known as the "All-Gas, Good Housekeeping Home," will be the envy of every woman who sees it, and plenty of women will see it, top to bottom, because it talks in terms of their needs, their tastes—and their budgets! That's because it was planned to meet the demands of the average American family, and to show them what can be done on a moderate income in the way of comfort, taste and convenience—with gas as the all-purpose fuel.

The modern gas equipment for heating, lighting, cooking and cooling, will send many a housewife home with many a bright idea for "improvements." In the all-gas kitchen, she will find every known modern convenience, scientifically planned and placed. In the all-purpose room, a new note in convenience for the housewife, she will see the most up-to-date gas heater and air-conditioner, and everything to take the woe out of wash-day!

The house will be completely furnished, decorated and maintained by Good Housekeeping Institute, distinguished authority on domestic architecture. It will be modern, but not modernistic. It will combine the gracious leisure of the 18th Century, with the streamline competence of the twentieth. (Decorating will be contemporary; furniture, of the 1700's.) It will be one-story; Colonial in design, and it will make every woman who sees it want to own one like it—at least, own some of the conveniences and comforts that are in it!

(Continued on page 119)

EXHIBITORS IN GAS INDUSTRIES BUILDING

American Gas Products Div.
American Stove Company
Bryant Heater Co.
Cleveland Heater Co.
Cribben & Sexton Co.
Detroit-Michigan Stove Co.
Estate Stove Co.
General Gas Light Co.
Glenwood Range Co.
Hardwick Stove Co.
L. J. Mueller Furnace Co.
Roberts & Mander Stove Co.
Robertshaw Thermostat Co.
Geo. D. Roper Corp.
Ruud Manufacturing Co.
Servel, Inc.
Surface Combustion Corp.
Tappan Stove Co.
Welsbach Co.

APPLIANCE & ACCESSORY MANUFACTURERS

SUBSCRIBERS TO GAS EXHIBITS, INC.

Alpha-Lux Co., Inc., The
American Cast Iron Pipe Co.
American Meter Co.
W. M. Chace Company
Clark Bros., Inc.
Consolidated Brass Co.
Cooper-Bessemer Corp.
Crane Company
Detroit Brass & Malleable Works
Detroit Lubricator Co.
S. R. Dresser Manufacturing Co.
Gas Purifying Materials Co.
Glamorgan Pipe & Foundry Co.
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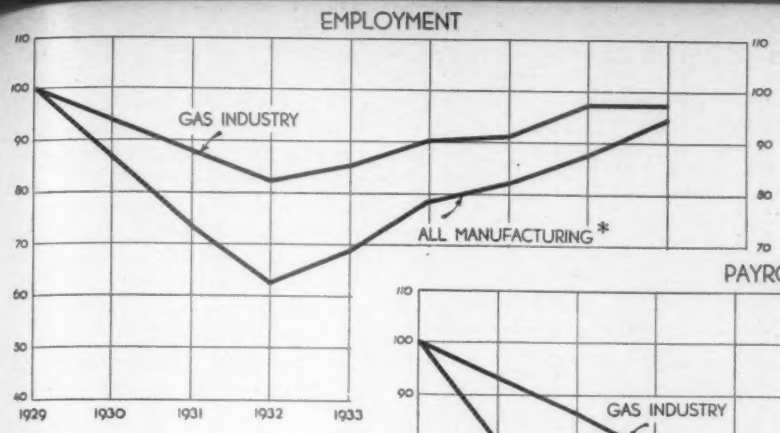
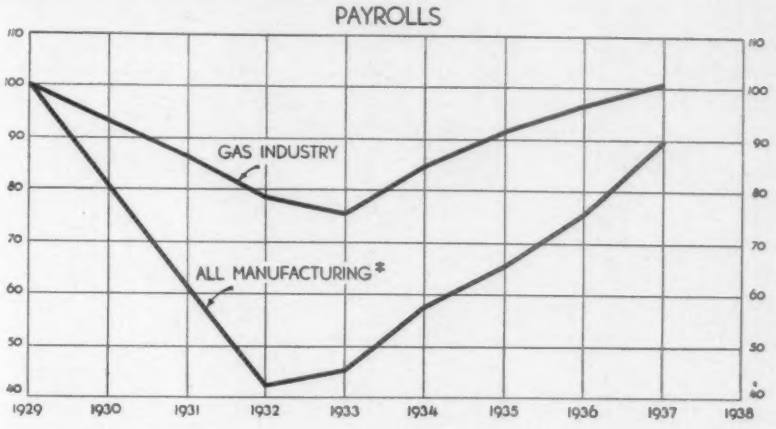
Mueller Company
Partlow Corp.
Pittsburgh Equitable Meter Co.
Research Corporation
Reynolds Gas Regulator Co.
Roberts Brass Co.
Roots-Connersville Blower Corp.
W. J. Schoenberger Co.
Security Stove & Manufacturing Co.
M. B. Skinner Co.
The Sprague Meter Co.
Superior Meter Co.
United Engineers & Constructors, Inc.
United States Pipe & Foundry Co.
Wallaceburg Brass Ltd.
Warren Foundry & Pipe Corp.
R. D. Wood Company
Worthington Pump & Machinery Corp.





Stability of employment and payrolls in the gas industry compared with manufacturing industries in the U. S. Index 1929 = 100. Prepared by Statistical Department, American Gas Association

* U. S. Bureau of Labor statistics

Stability and Vitality . . . *Watchwords of a Forward-Looking Gas Industry*

Conrad N. Lauer

By Conrad N. Lauer

President, American Gas Association

THE past few years have witnessed an increasing appreciation on the part of American industry of its responsibilities to employees and to society at large concerning the stabilization of employment. That the gas industry has not only been conscious of this responsibility, but has been in the very forefront of leadership in this regard, is evident by a study of figures.

It is generally agreed that the year 1932 marked the bottom of the decline of general economic activity in this country during the last depression. As indicated on the charts, by taking the year 1929 as 100 you will find that for all manufacturing industries as reported to the United States Bureau of Labor Statistics, employment in 1932 had fallen to 63 per cent of the 1929 figure, while for the gas industry, employment in 1932 was still more than 82 per cent of the 1929 level.

That is to say for all manufacturing industries employment declined 37 per cent from 1929 to 1932 but for the gas industry employment declined only 18 per cent.

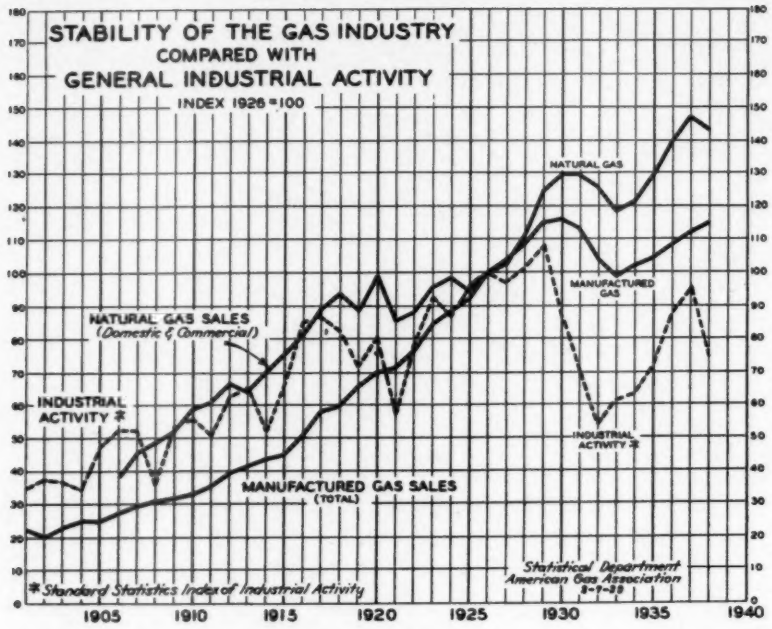
An examination of the payroll figures is of even greater interest. During this same interval the payroll of all manufacturing industries reporting to the Bureau of Labor Statistics declined 58 per cent. Payrolls of the gas industry, however, declined by only 21 per cent.

Since 1932, payrolls of all manufacturing industries have recovered to the point where, in the year 1937, they were only 10 per cent below the 1929 level. For the gas industry, however, in 1937 payrolls for 136,000 employees amounted to more than 222 million dollars, a figure actually above the 1929 level.

These figures serve to demonstrate not only the stability of the industry but also its magnitude. The average person is usually surprised to learn that the investment in the gas industry exceeds by many millions the amount of capital employed in the production of steel, which has long been considered one of the most basic of the great industries of the United States. While some four billion, 300 million dollars have been invested in the steel plants of this country, almost five billion dollars of capital is required to provide gas service to the more than 17 million customers of this great industry.

Today towns and cities with a population of more than 81 million people have available the innumerable conveniences afforded by this most modern fuel, gas.

Address before New England Gas Association, February 16, 1938.



An interesting side-light on the contribution of the gas industry toward improved living conditions for the workers engaged in supplying this essential service is indicated by the fact that, whereas in the big year 1929 the average employee in the gas industry worked 48 hours per week, by 1937 this had been reduced to 40 hours per week, and yet his average weekly earnings for the 40-hour week were slightly higher than in 1929.

Large Capital Investment

An important factor in this accomplishment and in the maintenance of the high standard of service to which gas customers have become accustomed, is the tremendous amount of capital that stands back of each worker in the gas industry. For example, in the automobile industry, approximately $3000 has been invested in plant and machinery for each worker employed. In the case of steel, this figure is about $7,000, while the railroads have an investment of approximately $24,000 for each employee. Yet the average worker in the gas industry has behind him the tremendous investment of $37,000.

Wages and salaries in the gas industry are high, amounting to an average of $1,638 a year, as compared with $1,560, for the automobile industry and $1,500 for the petroleum industry. And yet for each dollar disbursed by the gas industry in the form of wages and salaries, an additional forty cents is turned over to the various state, federal and local authorities in the form of taxes.

Preliminiary estimates indicate that revenues of the entire industry, both manufactured and natural, aggregated $786,576,000 in 1938, a decrease of 1.8 per cent from the preceding year. The manufactured gas companies grossed $367,714,000, a gain of 2.2 per cent for the year, while revenues of the natural gas companies were $418,-862,000 as compared with $441,-232,000 in 1937, a decrease of 5.1 per cent.

One of the most encouraging aspects of the data on the industry for 1938 is that for the first time in eight years the sales of manufactured gas for domestic uses, exclusive of house heating, registered a definite upturn. Sales of gas for cooking, refrigeration, water heating, etc., amounted to 198 billion cubic feet for 1938, an increase of 1.5 per cent for the year, indicating that the aggressive sales promotional and national advertising activities of the past few years are beginning to bear fruit.

The gain in house heating sales of manufactured gas amounted to 10 per cent and would have been even greater except for the mild temperatures prevailing in most sections of the country during the year.

Certified Performance

During 1938 the industry inaugurated a program for the design, production and sales promotion of a new type domestic gas range with Certified Performance requirements and adopted a special trade mark for ranges complying with these quality specifications.

More than sixteen range manufacturers are now producing ranges of this type and the number is growing rapidly.

More than one million gas ranges were sold during 1938 and the industry anticipates increased sales during 1939, with greater emphasis upon these quality cooking appliances.

Gas refrigeration continued to advance its achievements of previous years by again making a better relative sales showing than other types of automatic domestic refrigerators during 1938.

(Continued on page 119)

STABILITY OF EMPLOYMENT AND PAYROLLS IN THE GAS INDUSTRY COMPARED WITH MANUFACTURING INDUSTRIES IN THE UNITED STATES

Index 1929 = 100.0

	Employment		Payrolls	
Year	*The Gas Industry*	*All* Manufacturing*	*The Gas Industry*	*All* Manufacturing*
1929	100.0	100.0	100.0	100.0
1930	94.2	87.2	93.4	81.1
1931	88.4	73.8	86.7	61.8
1932	82.2	62.6	78.9	42.5
1933	85.3	68.8	75.7	45.3
1934	90.3	78.8	84.8	57.7
1935	91.3	82.1	91.6	65.4
1936	97.3	87.8	96.9	75.5
1937	97.4	94.8	101.0	89.8

* From U. S. Bureau of Labor Statistics.
Statistical Department, American Gas Association.

Interchangeability of City Gases

R. M. Conner

- **The limits of proper performance of gas appliances operating on different kinds of gas can be determined with reasonable accuracy by computation. Mr. Conner's article shows how it is possible to establish in a matter of a few minutes whether the gases under consideration fall within recommended limits governing interchangeability. Laboratory tests, however, should supplement the calculations to cover unusual cases which may require special treatment.**
- **For complete information on this subject, every gas engineer should have in his files the American Gas Association's mixed gas research bulletins Nos. 597, 645, and 689. These pamphlets summarize the results of more than 175,000 tests conducted on some 250 different gases over a 5½ year period.**

By R. M. Conner

Director, A. G. A. Testing Laboratories

PROBLEMS involving the interchangeability of city gases are intensely interesting to the majority of gas engineers and in a great many instances are an important part of daily routine. Consequently, thorough knowledge of such subjects is essential in satisfactorily disposing of gas mixing problems and also in analyzing the merits of any gas stabilization process.

Information is now available that will permit a reasonably accurate analysis of any proposed change-over problem. Limits have been established governing variations in heating value, specific gravity, chemical composition and gas pressure. A great deal of data has been supplied on rates of flame propagation which is very helpful in analyzing problems of this nature. The first work on such subjects to be undertaken on a large scale was that conducted by the American Gas Association Laboratories under the supervision of the Mixed Gas Research Committee.

Change-Over Assistance

In addition to making available the results of this research our Laboratories have directly applied these results by assisting many gas companies in the solution of their change-over problems. In most instances these services have been largely of an advisory nature. In others, however, the gas supplies under consideration have been made up synthetically at the main branch in Cleveland and numerous appliance tests conducted on them there.

Most companies faced with the necessity of making important changes in their gas supply can save expense and time if they will avail themselves of the information that the Association has on the subject. In most situations, however, the gas company's engineers can by application of the American Gas Association formula solve their problems of gas mixing and interchangeability. To assist in this work the significance and methods of using interchangeability formula will be discussed briefly.

The National Bureau of Standards, U. S. Bureau of Mines, L. J. Willien and others, have made many valuable contributions on this subject. The Association's Laboratories, however, were the first, insofar as the author knows, to lay down a definite formula and establish methods for use in determining limits of interchangeability. The formula, which is fully developed in Laboratories Report No. 689, follows:

$$C = \frac{h_t A_t d_a}{h_a A_a d_t} + \left(\frac{h_a A_a}{5000 E_a F_a} - \frac{h_t A_t}{5000 E_t F_t} \right)$$

The significance of the terms employed in this equation is shown in Appendix A. It will be noted that if the proper values are substituted in this equation for the gas on which appliances are adjusted and for the gas to be supplied a value of the interchangeability factor, "C," will be obtained. If this factor lies between 0.85 and 1.15 it may be assumed that the gases involved are interchangeable. If the value of "C" is above unity, it may be inferred that the gas being substituted for the adjustment gas will result in an increase in gas rate with a consequent tendency toward incomplete combustion as the value exceeds 1.15. If, on the other hand, "C" is below unity the substitute gas will be supplied at a lower B.t.u. input rate than the adjustment gas, and the resultant burner operation characteristics will tend to be unsatisfactory from the standpoint of flash-back and noise. The limiting condition in the latter respect is reached when "C" is 0.85.

Mathematical Approach

While the reader is referred to report No. 689 for a more complete discussion of the significance of the interchangeability factors as well as the general application of the A. G. A. formula to field conditions, in order to indicate briefly the mathematical approach to a gas mixing problem an example will be given. It is assumed that appliances are adjusted on a carburetted water gas with an analysis such as is shown in the first column of Table 1, and that it is desired to augment this adjustment gas with a certain percentage of coke oven gas having the analysis indicated in the second column of Table 1. The problem is to determine by use of the formula the amount of coke oven gas that may be added without resulting in unsatisfactory appliance performance.

The first step is to determine the heating value, specific gravity and air required for both gases. The so-called "chemical composition factor" which is the second term of the equation for the adjustment gas and the third term for the test or substitute gas is then calculated from the analyses of these gases. These values are shown in Table 1 and are, as will be noted, 0.461 and 0.481 for the coke oven and water gases respectively.

The next step is to obtain similar data for certain predetermined mixtures of the gas which may readily be done graphically. For example, the two calculated values for the "chemical composition" factors for the coke oven and carburetted water gases have been plotted in Figure 1 against the corresponding percentages of coke oven gas in the mixture.

A straight line connecting the two points will then indicate the chemical composition factor "k" for any mixture (in this case mixtures containing 25 and 50 per cent coke oven gas respectively were arbitrarily selected). The factors as selected from the curve are 0.476 and 0.471 for these two mixtures.

The same procedure is also applicable to the heating value, specific gravity and theoretical air required since these variables, together with the chemical composition factor "k", may be assumed as being linear functions of the mixture analysis.

With these four variables determined for the base gases and mixtures solution for the interchangeability factor "C" can be made. Results of such computations are shown in the first horizontal column of Table 2. The resultant values for the factor "C" are then plotted on Figure 1 against the percentage carburetted water gas in the mixture. Where this curve intersects the ordinate value of 1.15 it will be found that the indicated mixture would contain about 30 per cent coke oven gas. In other words, a mixture of 70 per cent carburetted water gas and 30 per cent coke oven gas should, according to the formula, be interchangeable with the base gas (carburetted water gas).

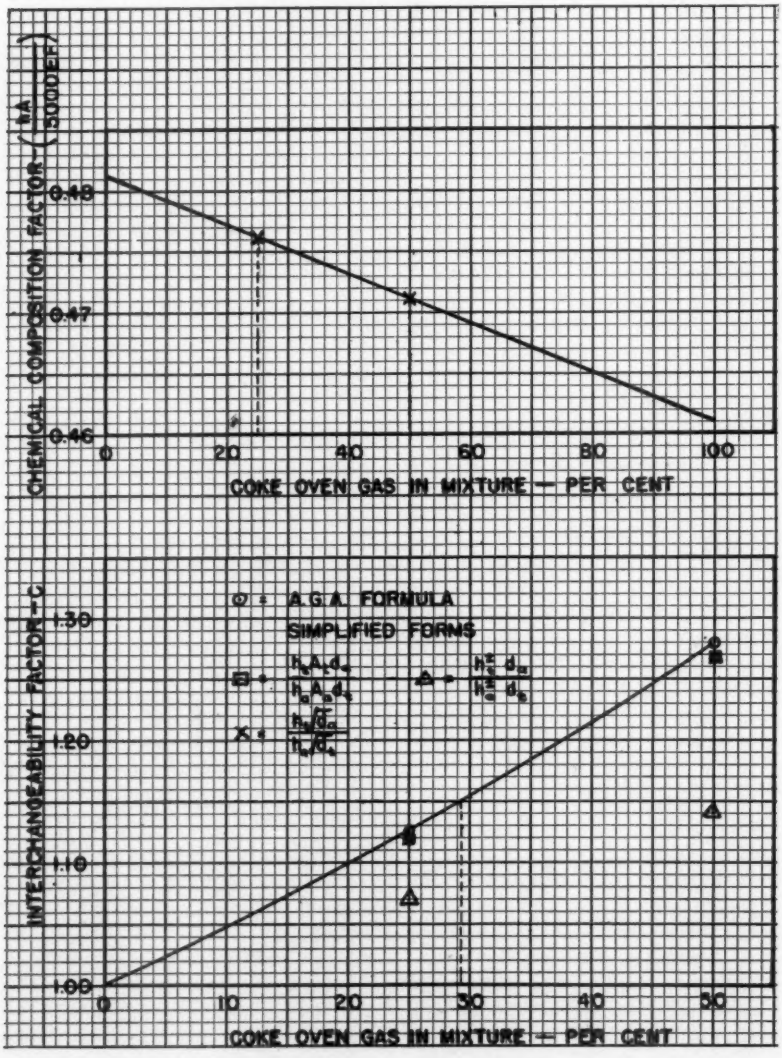


Fig. 1. Limits of interchangeability for coke oven-carburetted water gas mixtures with appliances adjusted on carburetted water gas

Simplified Formula

In some cases, for preliminary calculations, the first term only of the formula is employed, and the chemical composition factors neglected. This results in a simplified form of the formula, and values obtained with it are shown in Table 2 indicated appropriately on Figure 1. It will be seen that resultant values check very closely with those obtained when using the complete formula. While this indicates that in this particular example the chemical composition factors exert very little influence, this is not always true and for final calculations it is recommended in all important cases that the complete formula be employed.

Another simplified form of the formula is based on the rather definite relationship that the air theoretically required for complete combustion is proportional to the heating value of the gas. On this basis the interchangeability factor "C" $= \frac{h_t^2 d_a}{h_a^2 d_t}$. Values for this simplified form are also shown in Table 2 and are again plotted on Figure 1. These values check quite closely with the complete formula and the previously mentioned modified form.

A third form of the modified interchangeability factor is the quotient $\frac{h_t \sqrt{d_a}}{h_a \sqrt{d_t}}$. Values computed by employing this equation are also shown in Table 2 and are plotted in Figure 1. It will be noted that the results ob-

tained in this case do not check closely with other modified forms. In other examples an even greater deviation will be found; as a consequence, it is recommended that for preliminary work either of the first two modified forms be used in preference to the one last mentioned.

When the mixed gas research investigation was initiated in 1927 the practice of manufacturing very high heating value oil gases and carburetted water gases was relatively unknown. Since then, however, the production of gases of this kind, ranging in heating value from 800 to 1050 B.t.u., has become fairly common. These gases are generally the product of standby equipment and are normally used to supplement wholly or in part natural gas service ordinarily of a slightly higher average heating value. Obviously, it is of the utmost importance that standby equipment should provide a product that is entirely satisfactory from an interchangeability standpoint. This is particularly true where it is necessary to replace the base load entirely, such as may be the case in the event of failure of the natural gas transmission line supplying the system.

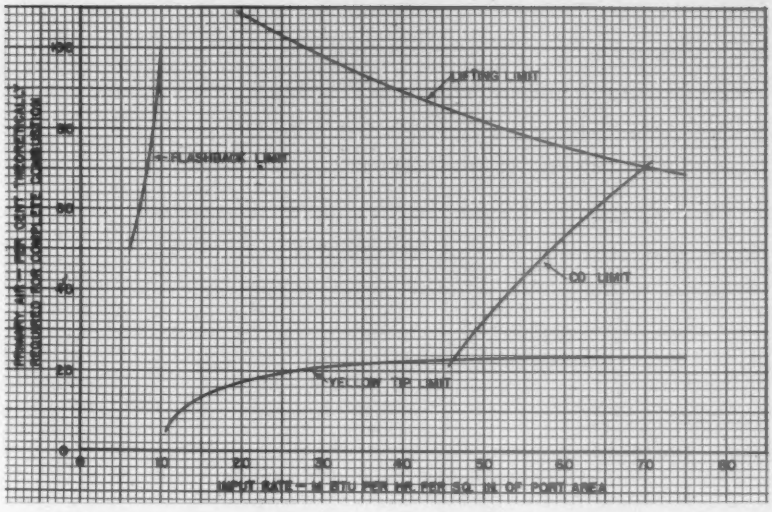


Fig. 2. Typical characteristic limit curves for manufactured gas

TABLE 1

PROPERTIES OF GASES EMPLOYED IN EXAMPLE

Constituent	*Carburetted Water Gas % by Volume*	*Coke Oven Gas % by Volume*	*Mixtures of Carburetted Water Gas and Coke Oven Gas** 75% C.W.G. 25% Coke Oven	50% C.W.G. 50% Coke Oven
H_2	30.95	50.15		
CO	23.75	6.95		
CH_4	17.45	29.80		
Ill	8.45	3.15		
CO_2	3.35	1.80		
O_2	0.85	0.65		
N_2	15.20	7.50		
Heating value, B.t.u./cu.ft.	543	556	547	550
Sp.gr. (Air = 1.0)	0.68	0.42	0.615	0.55
Theoretical air Cu.ft. per cu.ft. of gas	4.67	4.79	4.70	4.73
Factor "K"†	0.481	0.461	0.476	0.471

* Values shown for mixtures obtained from straight line curves connecting corresponding values for base gases.

† Chemical composition factor $= \frac{h\,A}{5000\,EF}$

TABLE 2

INTERCHANGEABILITY FACTORS "C" FOR VARIOUS GASES WITH ADJUSTMENT ON CARBURETTED WATER GAS

Formula	*Operation on—* Carburetted Water Gas	75% C.W.G. 25% Coke Oven	50% C.W.G. 50% Coke Oven
Complete A.G.A. Formula	1.0	1.125	1.28
$C = \frac{h_t A_t d_a}{h_a A_a d_t}$	1.0	1.12	1.27
$C = \frac{h_t^2 d_a}{h_a^2 d_t}$	1.0	1.12	1.27
$C = \frac{h_t \sqrt{d_a}}{h_a \sqrt{d_t}}$	1.0	1.07	1.14

High heating value oil gases are normally high in so-called illuminants which are more prone to burn with yellow tips and, in the case of ethylene particularly, are faster burning than natural gases. With such gases the importance of giving appropriate weight to chemical composition cannot be overlooked. Subsequent experimental work conducted by the Association's Laboratories indicates that the formula developed if properly interpreted will depict to a reasonable degree of accuracy results that might be expected in the field on interchangeability problems involving high heating value manufactured gases. Despite this fact, however, it is felt that additional research work should be conducted.

Burning Characteristics of Gas

Thus far we have considered the mathematical approach to mixed gas problems by use of empirical formulae, limits of which were based on appliance tests. There has also been mentioned the actual testing of appliances on gases involved for the purpose of reaching a solution to interchangeability problems. A third fundamental

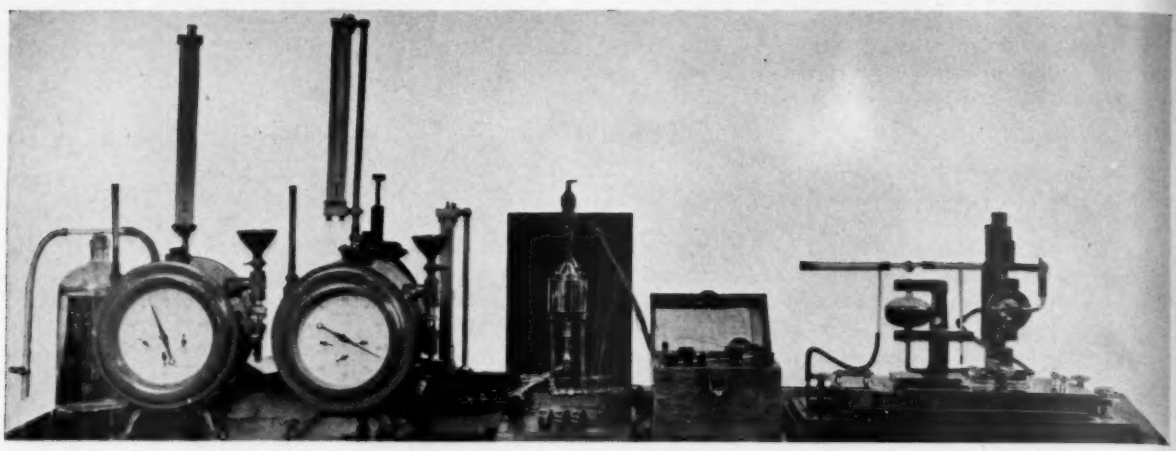


Fig. 3. A. G. A. Precision Burner with supplementary equipment

method of approach which should be found useful, particularly where actual performance data are required and where the supply of gases contemplated must be transported or synthesized and are, therefore, quite limited, is to make a comparison of the burning and physical characteristics of the gases.

Burning characteristics of different gases may be compared directly by use of a single burner, if properly designed, and by proper correlation of resultant data through the use of a rational and proven graphical method. Typical curves are shown in Figure 2. These data indicate burner lifting, flash-back, yellow tip and carbon monoxide production limits. This method of expressing results was first employed by the Gas Section of the National Bureau of Standards, although it is now quite generally employed by most gas laboratories. Such curves, if obtained for different gases with burner and other test conditions remaining comparable for each series of tests afford an accurate index of the burning characteristics of such gases and give an excellent insight into the comparative performance of appliances on the same gases.

Precision Burner

As indicated in the previous paragraph the type of data represented in Figure 2 may be obtained from a single burner of suitable design. Somewhat more than a year ago the Association's Laboratories developed what is known as the A. G. A. Precision Burner (see Figure 3). This device is portable, can be easily and very accurately adjusted and has a wide range of flexibility in performance. Its principal advantages lie in the speed with which results can be obtained and the high degree of accuracy its use affords. It can be conveniently employed to determine the characteristic limit curves indicated in Figure 1. Moreover, it is so designed that it can readily be used to determine other flame characteristics such as height of the inner cone of the flame, points of flash-back, lifting, or yellow tip in reference to a precision calibrated air shutter. These latter features also make its use feasible for control of gas quality during production or mixing processes.

Appendix A

SIGNIFICANCE OF TERMS EMPLOYED IN A. G. A. FORMULA

C = index of change in performance of appliances. For continued satisfactory performance of appliances when the gas on which they have been adjusted to perform satisfactorily (adjustment gas) is to be replaced by another gas (test gas) the value of C should be held between 0.85 and 1.15,

h = gross or total heating value, B.t.u. per cu.ft.,

A = air theoretically required for complete combustion, cu.ft. per cu.ft. of gas,

d = specific gravity (air = 1.0),

E = the heat capacity of the theoretical products of combustion 60° F. to 1600° F., B.t.u.,

$= 0.029V_{CO_2} + 0.023V_{H_2O} + 0.0189 V_{N_2}$, where V = volume of each product as indicated by the respective subscripts CO_2, H_2O and N_2, formed by the combustion of one cu.ft. of gas with the air theoretically required for complete combustion, cu.ft., and 0.029, 0.023 and 0.0189 = heat capacity of each product of combustion 60° F. to 1600° F., B.t.u. per cu.ft.,

F = summation of the products of the mol fraction and a constant resolving each combustible constituent to the basis of equivalent free hydrogen,

$= H_2 + 5.36\ CO + 35.2\ Ill. + 27.3\ CH_4 + 38.7\ C_2H_6 + 80.8\ C_4H_{10}$, where H_2, CO, Ill etc. = mol fraction of each combustible constituent in the gas, and

a and t = subscripts designating the adjustment gas and test gas respectively.

Gas Men Plan Meeting Place at Fair

MEMBERS of the gas industry will have a meeting place of their own at the New York World's Fair. For this an organization to be known as The Court of Flame, Inc., has been formed.

A separate section of the gas industry's "Court of Flame" exhibit group at the World's Fair has been set aside for the exclusive use of this organization. A second floor lounge with a wide terrace overlooking the exposition grounds will offer facilities for business meetings, social functions, and informal "get-togethers" for men of the industry.

Membership will be open to all executives and employees of gas companies and manufacturers of gas appliances and equipment participating in the Gas Industries Exhibit.

Heads Carnegie Gas

DANIEL S. KEENAN has been elected president of the Carnegie Natural Gas Co. and Apollo Gas Co., subsidiaries of the United States Steel Corp., succeeding the late S. W. Meals.

Gas Refrigeration . . . *Why We Want the Load and Where To Get It*

R. J. Rutherford

As chairman of this year's Refrigeration Committee of the Commercial Section, R. J. Rutherford, of the Worcester Gas Light Company, Worcester, Mass., heads up the nationwide refrigerator sales campaign which begins March 1. Elsewhere in this issue, is described the preliminary "Rigging Up" contest which precedes the main portion of the "Man-the-Sales" campaign which will extend throughout April, May and June.

In this article, Mr. Rutherford points out the value of the gas refrigeration load, and where and how it might be obtained. It is a thought-provoking and timely contribution.

ASIDE from our belief that gas refrigeration is a superior service for our customers, what is its status from a load standpoint? To those concerned with natural gas, perhaps due to the economics, you may not find some things as important as manufactured gas people. Nevertheless, there are three important considerations to the sale of gas refrigeration for any company.

First is merchandise profit. In those companies where sales of refrigerators are approximately 2 to 3 per cent of their meters per year, this profit item is extremely important. Obviously it can permit the promotion and development of other loads, newer loads and perhaps larger in revenue but ordinarily too costly to obtain.

Permanency Factor

Second is the permanency factor. This is the factor of continuing revenue. Refrigeration load is at least equal to if not better in this respect than even the range load. Usually when a new range sale is made, we can feel pretty assured of continuing revenue from this sale for at least seven or eight years. On refrigerator sales this same expectation of permanency of revenue can be assumed with this additional point that in the case of a refrigerator, it is increment or additional load.

There is no other appliance we sell that has these features to this degree. A new gas refrigerator sale has less chance of being replaced by competitive service than any other device we promote. Furthermore, the gas refrigeration load has another unique feature in that its installation may well insure the permanency of the other loads of the same consumer.

The third consideration is that of the maintenance or service expense to the company during the life of the installation. When the plan of giving additional four years' warranty for $3.00 was recently announced, how many of your companies accepted this as a marvelous offer, or how many tried to determine if you could afford to pay the manufacturer $3.00 for this additional warranty?

Such a study is highly recommended for many reasons. No subject today is more actively discussed in the industry than that of reducing servicing costs. It is submitted, however, that refrigerators are contributing less than their share to this high expense. It should be revealing and possibly will make necessary a revamping of your thinking after reviewing the downward change in servicing costs and unit replacement costs over the last five years.

We all probably have some figure in mind covering such costs. To obtain up-to-date figures on these is important. To make comparison with these costs on other devices is still more so. Ranges are in that stage and I feel a necessary stage, of new gadgets. New gadgets till perfected cost money to service and repair. Refrigeration, on the other hand, is in that stage of simplification and each year shows decreasing servicing expense. Enough, however, of why we need the load and its advantages to us. Keeping in mind the old axiom that a brain is only as strong as its weakest think, let us touch on some thoughts on markets.

Now, for those of you who might be in the position of the young lady who when asked if she knew how to play golf, replied, "Oh dear no I don't even know how to hold the caddy," your committee offers some suggestions which it is hoped will at least be thought provoking.

Three Base Markets

There are three base markets for the sale of gas refrigeration and at least one corollary market of importance.

The three base markets consist of: 1. ice users, 2. builders of new homes or new apartment houses and 3. present users of obsolete automatic refrigeration usually called the replacement market. We would like to submit as a corollary market newly married couples.

The first two markets, namely, ice users and new construction are old friends. However, the third base market does contain some elements for conjecture which may help solve at least one problem in the ice user picture. The ice user is probably still such for only one reason, true or imagined, and that is, first cost of equipment. A major problem in the replacement market is that of trade-ins. Can these two apparent disadvantages in any way be used to solve both problems.

The automobile industry has gone through exactly this same cycle. What have they done about it? In the early days of the automobile they had a market analagous to the ice user. As their sales progressed and the satura-

Presented at Mid-West Regional Gas Sales Conference, Chicago, Ill., Feb. 10, 1939.

● Nearly a million industrial plants USE GAS TODAY, but every one of them can be using MORE GAS TOMORROW—if we go after them. How? That's the objective of our Industrial Gas Sales Conference in Cleveland, Monday and Tuesday, March 27 and 28. When you Come to Cleveland you will profit from . . . .

ANALYSES of promising markets by men who know what they are talking about—by men who are getting results.

OUTSIDE VIEWPOINTS by men of high standing, but not directly engaged in the gas business—by men who *can* see the forest *despite* the trees.

SALES EXPERIENCES of men facing *your* kind of problems—of men who have worked out careful sales plans and used them to build up sendouts and equipment sales.

DISCUSSIONS conducted in adjacent rooms at the same time so that you can pick your subjects or travel from one to the other and participate in all—discussions planned to get *you* in to them and *information for you* out of them.

INVESTIGATIONS of sales possibilities, not only in new fields, but in old ones which have not yet been fully cultivated.

DRAMATIZATIONS which will give you ideas—an all-technicolor movie on "steel"—an 8-panel display of the cooperative national promotion being carried on to help you sell.

EXPLANATIONS of interesting applications of industrial gas in new as well as old fields—in fields that can mean more business for you

AMERICAN GAS ASSOCIATION
CONFERENCE ON INDUSTRIAL GAS SALES
MONDAY & TUESDAY **MARCH 27 and 28** HOTEL STATLER

tion went up, the replacement market became the prime market. This naturally presented the used car problem. Rather than treating this as a handicap, this situation was turned about into an asset. It was accepted as a necessary part of doing business. As time went on they even advocated trading in your car every year. The next step was to sell this practically new trade-in to some one with a worse or older car until after a series of about five trades they ended up with a jalopy. Even this would be sold to Joe College and he would taste the pride of ownership even though small.

Study will show that there is some very sound economics in this method. First, Joe College becomes educated to the conveniences and prestige of this form of transportation. After a year or two he's a prospect for a little better car and so on till a new car owner has been born, weaned and reached maturity. And, note that the Buick agency may sell second-hand Fords or Chryslers or any make to get over the broad point of automobile ownership.

Second, and just as important. Joe has been building up an equity in automotive equipment from this first purchase on. He paid, say, $50.00 for the jalopy. Lo and behold when he goes to trade it in, it's worth as much as $40.00 on a better car. Joe thinks he's smart. He's just fixing, actually, to manufacture in the future, other jalopies for other self-educated Joes, but so goes the cycle. Building desire and building equity. Isn't there a lesson there that can be applied to gas refrigeration?

Purcell Heads Richmond Gas Department

JAMES M. PURCELL has been appointed superintendent of gas production and distribution in the City Department of Public Utilities of Richmond, Va. The death of William Lawton, Jr., chief of the Bureau of Gas and Water Distribution, has resulted in a division of Mr. Lawton's former duties according to Director J. R. A. Hobson, Jr. Mr. Purcell will have charge of all gas activities, while Marsden C. Smith, chief of the Bureau of Water and Electricity since 1925, will be in charge of water and electricity.

Mr. Purcell has served for a number of years on the Gas Production Committee of the American Gas Association. He is also a former associate of the American Institute of Electrical Engineers.

Fuel Saver Campaign . . . *Nets Record-Breaking Water Heater Sales*

By W. Joyce Ayres

Iowa-Nebraska Light & Power Co., Lincoln, Neb.

Herewith Mr. Ayres describes a unique sales activity which in its first four weeks sold more than 50 per cent of the entire year's quota. The campaign defies precedent and is being conducted in a period normally considered a dull season. The Iowa-Nebraska company is jubilant over the results to date which should prove an encouraging nudge in the ribs to sales managers nationally.

HISTORY is being made in the gas appliance industry! At least one operating company is making history—and doing it in a month of the year when most sales are at a low ebb.

The "history" that is now in the making is the sale of automatic gas water heaters, and the vehicle by which startlingly successful results are being produced is the now well-known "Fuel Saver" campaign. The company that is landsliding these unprecedented sales under the wire in January is the Iowa-Nebraska Light and Power Company of Lincoln, which in cooperation with other United Light and Power Service Company organizations, as well as a number of other midwestern utilities, launched the Fuel Saver crusade against furnace coils on January 3, 1939, in what is believed to be the first region-wide concentrated effort to sell automatic gas water heaters in the depths of winter.

100% Employee Cooperation

While many of the cooperating companies have shown mild successes to date, the Iowa-Nebraska organization with 100 per cent company-wide employee cooperation has chalked up results that set an all time high in January water heating sales and has in the campaign's first four weeks *sold more than 50 per cent of its entire year's quota of 900.*

The Iowa-Nebraska is a company of 24,500 residential gas meters, which at the end of 1938 had reached a saturation point of 30 per cent on automatic gas water heaters, while more than 70 per cent of its customers had some form of gas water heating. In establishing 1939 quotas approximately one sale for every 25 residential meters was the basis for computation, hence 900 automatic gas heaters for the year was the goal for which the Iowa-Nebraska company was to shoot.

The "Fuel Saver" campaign was an idea growing out of a discussion of plans for "plus" water heater business in 1939. The group of utility sales executives who "hatched the plot" had one further and long-range step in mind—that is, to eventually convert automatic water heaters from purely a seasonable item (spring and summer) into a year-around selling appliance, pushed as briskly and with as much success in January as it is in June.

The economy appeal rang the bell with the idea's planners, and ultimately the Fuel Saver theme was adopted, appealing to the householder to save a percentage of his fuel bill by removing his furnace coil and—since he would then be in need of hot water from some other source—install an automatic gas water heater.

Fuel Saving Idea Clicks

The fuel saving story in January seemed to its planners "a natural" and results during the first four weeks of the campaign indicate that the idea has clicked. Predicated upon the thought that people are more conscious of their fuel costs in January and February, with more time to think about such items as furnace coils being "tapeworms" of the fuel supply, with Christmas bills and first-of-the-year expenses to be met, with more of a disposition to save at this time than at any other time of the year, with more hours spent at home to receive salesmen, the "Fuel Saver" campaign was launched immediately after New Year's for a ten-weeks' period.

A complete program of advertising and sales promotion was created, prepared and distributed to support the selling efforts. All major advertising media were pressed into service, with coordination of advertising and selling emphasized. The general media copy, particularly newspaper and outdoor, was confined to a "teaser" style, yet designed in sufficient challenging fashion to arouse instant and general curiosity.

Specific and detailed information of the Fuel Saver plan was incorporated in a barrage of sales promotion material, varying in size, shape, color and content. All advertising and sales promotion, however, stressed the saving of a percentage of the fuel supply now, and added "Try a Fuel Saver—Convince Yourself," indicating a free trial period.

Since January and February are annually "dog days" in appliance sales production, as well as in shop time for service departments, all available manpower of the utility has been marshalled to thoroughly canvass the entire list of the company's present and former services not now experiencing the multiple benefits of automatic water heating. This house-to-house canvassing in most instances is being conducted by crews of salesmen, pooling their immediate results but retaining individually any unsold prospects in their respective territories for a later call back.

Informal Contests

In the conduct of this crew-selling several informal contests have developed between individual members of the same crew, with a result that some crew-members have done an almost unheard-of job to outdo fellow members in hanging up a banner week. So spirited was the rivalry in one Iowa-Nebraska district sales crew during the third week of the campaign that the group handed in a total sales report *for the week* which *nearly doubled* the entire 1938 sales for their division. Most districts of the company have experienced similar success with the crew-selling plan, stating that this method almost entirely eliminates the many psychological disadvantages accompanying the average "cold canvass."

During the ten weeks' period of the campaign every display floor in the company's thirty-four gas offices resembles literally a forest of water heaters. Mass displays crowd each floor and fill all windows, augmented with festive, multi-colored banners, stickers, pennants, backgrounds and display cards, each proclaiming some individual feature of automatic water heating.

The attention of the entire gas industry apparently has been attracted to this out-of-season campaign. Inquiries have been made regarding Fuel Savers from all parts of the United States, and to date more than a score of companies have adopted the plan in at least modified form. Others indicated great interest in the idea but preferred to await the trend of results before putting the plan into operation.

This astonishing new and effective selling plan was created as an approach to the problem of attracting attention to the furnace coil with its so-called "free hot water" and replacing that unsatisfactory supply with full time automatic hot water service. It was developed and promoted through the United Light and Power Service Company under the direction of C. A. Nash, vice president. The Iowa-Nebraska, which is one of the larger United Light operating groups, took the initiative in putting the plan to work and is leading the field in water heating sales during the winter months.

Gas Fared Well in 1938 New Home Building

Alexander Forward

HOUSING activities represent the greatest of gas industry opportunities, Alexander Forward, managing director of the American Gas Association, told delegates at the annual convention of the New England Gas Association on February 16. This fact is borne out by partial returns from a survey of gas companies now being made by the Association to determine the part gas played in new building during 1938.

Of the 24,441 new homes so far reported, 84.7 per cent put in gas for cooking, the remainder being divided among coal, oil, and electricity. The proportions of manufactured gas and of natural gas were about the same, Mr. Forward stated.

Only 10 per cent of these homes were equipped with new gas refrigeration. However, Mr. Forward pointed out, often refrigerators are transported from the old to the new home; often they are not included at time of construction; and in this field competitors are very numerous and backed by heavy advertising. Straight gas companies equipped 11.1 per cent of new homes with gas refrigerators; combination gas and electric companies, 6.8 per cent.

More than half, or 54.4 per cent, of these new homes are equipped with gas for water heating. For house heating, 29.1 per cent of the new private homes reported are using gas.

In the case of wholly owned Federal Housing Projects built by the Public Works Administration, gas fared better than any other one fuel. These projects have now been transferred to the United States Housing Authority which has leased them to local housing authorities. The decision as to fuel for new U.S.H.A. buildings is now made locally.

In one instance the U.S.H.A. has repeatedly advised a local authority, electrically dominated, to use gas cooking. Six of the ten pending projects will use gas, two will use kerosene and the remaining two are still in doubt between gas and electricity.

Gas Send-Out Record

SEND-OUT of gas by the Public Service Electric and Gas Company, Newark, N. J., in January was the largest of any month in the history of the company, totaling 2,667,000,000 cubic feet. This was an increase of 4.1 per cent over January, 1938, the previous record month.

"Rigging Up" Contest Offers $2,250

A "RIGGING UP" contest for the sale of gas refrigerators throughout the month of March will serve as a preliminary selling campaign to the main national drive in April, May and June. Cash awards totaling $2,250 will be distributed to 197 top-ranking gas refrigerator salesmen at the end of the month.

The men who are successful in March will be among the sales employees of utilities that have signed up for the annual Spring and Summer contest which is to be known this year as the "Man-the-Sales" campaign. This campaign is to be conducted by the Refrigeration Committee of the American Gas Association. The contest, in which approximately $30,000 will be awarded to salesmen, is sponsored by Servel, Inc., through the Association of Gas Appliance and Equipment Manufacturers.

Following the practice of many years, trophies will be awarded to winning companies. The trophy chosen this year is a model of the "Flying Cloud," a famous clipper ship which made speed records in voyages around the Horn in the fifties.

Gas Dominates Life Homes

By J. W. West, Jr.

Director, Home Appliance Planning Bureau

THE active cooperation of the Home Appliance Planning Bureau with the much discussed and publicized *Life* home program is resulting in valuable publicity for gas.

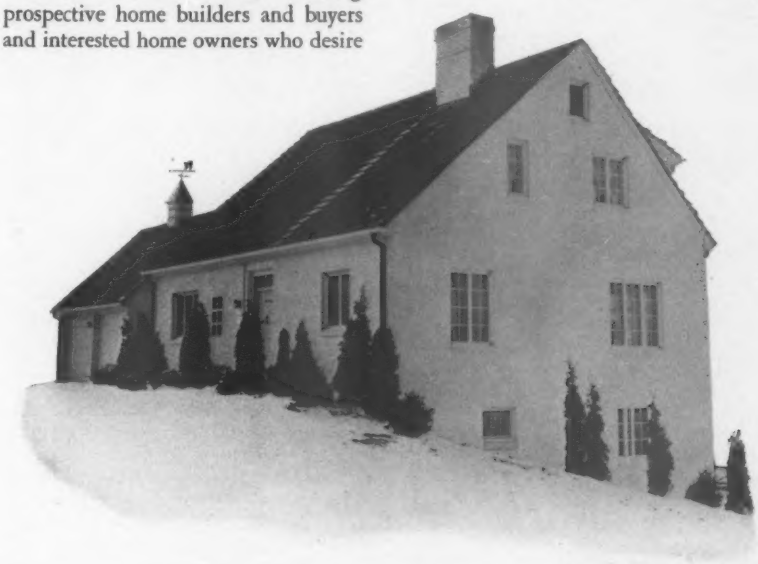
That gas and gas appliances are superior for cooking, water heating, refrigeration, house heating and other domestic uses, is being vividly and dramatically demonstrated to the building profession and the consuming public by the predominate selection of gas services by representative builders of *Life* homes built in key cities throughout the country.

Life Program Popular

As a result of extensive research by *Life* among home owners and prospective home buyers to determine the type of homes desired by typical American families whose incomes range from $2,000 to $10,000 a year, eight homes —four modern and four traditional— were designed by leading architects. Publicized by *Life*, with its nationwide weekly circulation of over two million, in cooperation with *The Architectural Forum*, the program has been heartily endorsed by architectural, building and housing authorities. Many thousands of inquiries have been received regarding these homes from the general public.

Twenty-seven *Life* homes have been definitely planned, eight of which have been completed and officially opened to the public. Thousands of persons have visited these homes, including prospective home builders and buyers and interested home owners who desire to modernize their existing homes. The fact that they have seen gas appliances, which the local gas utility companies sell on their sales floors or through their dealers, in a *Life* home must definitely result in their increased interest in gas. It is, therefore, of great importance to our industry that gas has dominated *Life* homes as shown in the table below.

Reports indicate that gas will play an important part in the servicing of the other *Life* homes contemplated or under construction. One of the most recent *Life* homes to be opened to the public is constructed at Baldwin Manor, near Pittsburgh, Pa. Designed by Royal Barry Wills and built by Barone and Lind, the developers of Baldwin Manor, this home, using Gas for the



Photograph of Life *home at Baldwin Manor, near Pittsburgh, Pa. Royal Barry Wills, architect; Barone & Lind, builders*

Kitchen in Baldwin Manor Life Home showing gas range and gas refrigerator

Location	*Opening Date*	*Gas Services*
Massapequa, L. I.	October, 1938 (First in U. S.—sold)	Four Big Jobs.
Atlanta, Ga.	Jan. 8, 1939	Four Big Jobs.
Pittsburgh, Pa. (Baldwin Manor, Pa.)	Jan. 19, 1939	Four Big Jobs.
La Grange, Ill.	Spring	Four Big Jobs.
Tenafly, N. J.	Spring	Four Big Jobs.
Boston, Mass.	Spring	Four Big Jobs.
San Francisco, Cal.	Dec. 4, 1938	Cooking (gas and electric ranges to be alternately displayed). Water heating and house heating.
White Plains, N. Y.	November, 1938—sold	Water heating and house heating. Range and refrigerator to be installed by purchaser.
Los Angeles, Cal.	Dec. 18, 1938	Water heating and space heating.
Baltimore, Md.	Feb. 5, 1939 (2 homes)	Cooking and water heating in each.

Four Big Jobs, was visited by over 35,000 persons during the first demonstration week.

Barone and Lind are outstanding builders and their development, comprised of 114 acres, is an example of modern housing at its best. A. J. Barone states "We believe that the Pittsburgh public is becoming more home conscious and that the effect of homes designed by famous architects will have a definite influence on home builders in Allegheny County."

Among the many members of the gas industry responsible for the splendid showing of gas in *Life* homes are: F. E. Sellman of Servel Electrolux; W. J. Schmidt, Long Island Lighting Company; R. E. Fisher, Pacific Gas and Electric; F. M. Banks, Southern California Gas Company; J. W. Lea, Atlantic Gas Light Company; W. L. Hutcheson, Manufacturers Light and Heat Company; C. W. Tennant, Western United Gas and Electric Company; Dorsey R. Smith, Consolidated Gas Electric Light and Power Co. of Baltimore; J. P. Leinroth of Public Service of New Jersey; and John J. Quinn of Boston Consolidated Gas Company.

Gas utility companies will find it well worth their while to participate in this highly publicized housing program. Information and details of the program are available through the Home Appliance Planning Bureau of the Association.

Houston Natural Reports High Dealer Appliance Sales

GAS appliance dealers in the Houston Natural Gas System outside Houston, Texas, may well be proud of their sales results in 1938. As a result of their activity in conjunction with the system's seasonal cooperative campaigns, dealers averaged selling 26 out of each 100 homes served one of the three major appliances in 1938—a range, a water heater, or a gas refrigerator.

The year 1938 saw two seasonal cooperative water heater campaigns net 53.5 per cent of the year's total sales, both highly successful campaigns. The "finger-tip" campaign in February netted 471 sales, and the September "nickel down-nickel a day" campaign resulted in 458 sales, a total of 929 sales in two three-week campaigns. As a result of this seasonal activity plus continuous effort on the part of all water heater dealers, water heater sales in 1938 reached 1,737, or 10.34% of meters, an increase of 32 units over the 1937 high point.

Dealer Sales Mount

In the four years, 1935 through 1938, dealers cooperating with Houston Natural Gas System in the towns outside Houston have sold 7,987 ranges, 5,847 water heaters, and 3,073 gas refrigerators. Using conservative average retail prices of $100 for a range, $60 for a water heater, and $200 for a gas refrigerator, this represents $1,764,120 in sales of these three major gas appliances by dealers.

In addition to these appliances, 12,823 gas heaters of the radiant or circulating type and 160 central or floor furnaces have been sold. This will bring the sales total of gas appliances for dealers in the neighborhood of two million dollars. This represents sales volume and profits for dealers because the Houston company believes in and practices 100 per cent cooperation with all dealers.

The 1939 program for Houston Natural Gas System outside Houston was presented to gas appliance dealers and gas system employees at banquet meetings held in Houston on January 24, Victoria on January 25 and Alice on January 26.

The 1939 program is built as a four-way program to promote dealer sales of modern gas appliances for the four big household jobs—cooking, water heating, refrigeration and house heating. The first step in this four-way program is national advertising in several magazines of large circulation, keyed around the dynamic, sales-stimulating theme: Let GAS do the four big jobs.

The second step in the four-way program is local seasonal cooperative campaigns. The third step in the program is liberal four-year budget terms for all gas appliance dealers on all A. G. A. approved gas appliances. The final step is dealer advertising and promotions throughout the year on dealers' own lines of gas equipment, utilizing all manufacturers' helps.

Selling Tips Given

In addition to these four points, dealers will continue to use the gas company offices as a display floor without cost to dealers. *Burner Tips*, the monthly house organ, will carry details of plans and campaigns, and will report sales by districts each month. Incorporated with this house organ is a page of selling suggestions for salesmen, "Salesmen's Selling Slants," selling tips taken from various sources, concentrating salesmen's attention on pointers that can increase their effectiveness in selling. One feature of this is a monthly quiz, ten points for the salesman to rate himself on, for his own satisfaction.

The System's district managers will be working in 1939 to win the Frank C. Smith Cup, a new annual honor award for distinctive accomplishment in the cooperative sales plan, based on the sale of four major gas appliances as against quota. Floor furnaces have been included with ranges, water heaters and refrigerators in figuring this award. The cup becomes the permanent trophy of a district when it is won for three years, not necessarily consecutive years.

To Managers of Natural Gas Companies —Talk Shop and Earn $150

Did anyone ever offer you money to talk about your work? If not, then that offer is open to you now.

Instead of talking, however, the Natural Gas Section of the American Gas Association is asking you to tell in writing all about the problems, the ups and downs of resident management. The Association is interested in all the phases of your job; other managers are interested in your problems and how you have solved them—problems of operation, sales, accident prevention, public relations, etc.

If you have misplaced your copy of the A. G. A. MONTHLY for January which gave the rules for the Natural Gas Section Essay Contest, write in at once for a copy of them. The contest closes on March 15 and your paper must be in before that time.

Cash prizes of $150 are offered for the best essays and authors of winning papers will present them at the May meeting in Tulsa. The problems of the Local and District Manager are considered of such importance that it is planned to devote a session at the Tulsa Convention to their discussion for the mutual benefit of the great number of men interested in this branch of the natural gas industry.

Sit down at your typewriter today and tell us about your job.

Natural Gas Supplies Heat and Hot Water to Student Field House

Stadium and field house at Geneva

WHEN the Geneva Board of Education of the local school system decided to build a combination stadium and field house for the school's outdoor sports, the aesthetics of the building to conform to surrounding grounds, the heating of the building and the hot water service were the important factors which had to be carefully considered.

The original plans for heating and the hot water supply as set up by the architect called for a steel tubular boiler oil-fired and a fourteen hundred gallon tank with steam heat exchanger for the hot water service. A duct system within-a-duct steam heaters located in the loft of the building was to furnish the heat.

A "Natural" Gas Job

The New York State Electric & Gas Corp. of Geneva studied the original specifications and after careful consideration pointed out to the Board the limitations of a wet system in this building and also the inflexibility when different temperatures were required in various parts of the building. There was the additional factor of the possible need for hot water at times when the weather was warm enough not to require building heat.

Hence, here was a "natural" application of individual control suspended unit and floor type heaters with the use of continuous flow automatic hot water heaters for the hot water service. The Board was convinced that our method of taking care of these two important requirements was right and so gave us the job of designing a heating, ventilation and hot water supply system. The photographs give an idea of the relationship of the gas-fired units to the building better than a word description.

The building is 80 ft. long by 40 ft. wide and consists of the coach's room, ticket office, rubbing room, entrance hall and men's lavatory in the entrance or south end, a main locker room with eight shower heads comprises the center section, rubbing room or dry room, another shower room with six shower heads and a visiting team locker room are located beyond the central section to the north. The water heaters are located in the extreme end of the building to the north in a room originally designated as the boiler room. Every room is adequately heated and well lighted which will assist in making the building comfortable and keeping it clean.

Photographs showing gas floor unit and two suspended units

By T. V. BALDWIN

New York State Electric & Gas Corp., Geneva, N. Y.

There are six No. 75 suspended Reznor unit heaters and four No. 65 Reznor floor space heaters located in various rooms throughout the building. All heaters have individual thermostats but are controlled from a master electrical switch in the coach's office. Each heater has a transite vent of the proper size extending into the loft space above ceiling and the consolidation of all heater vents is made into four main vents extending through roof.

The ventilation of the building depends on 3-15" stacks extending from the ceiling of the locker room and the two shower rooms through the roof and terminating in 15" turbine-type ventilating heads. Adjustable grilles in the ceiling on the end of these stacks determine the amount of air discharged from the building. The reason for locating two of the stacks in the shower rooms is to remove steam or vapor from the shower heads.

The water is heated as explained above by three No. 8 and one No. 4 continuous flow automatic gas water heaters which will deliver 28 gallons of water per minute at a temperature of 140° F. The shower water is mixed at a thermostatically controlled mixing valve to give each shower the proper amount of water at bathing temperature.

It is anticipated that the building will be used in the fall until Thanksgiving and in early spring from the middle of March until June Commencement. The estimated cost for heating and supplying hot water for the year with natural gas as the fuel is $375.00-$400.00. This is probably the first stadium field house under the State School System to be heated with natural gas.

The building is constructed of masonry and steel and virtually the only wood used in its construction is for the door casings, doors and roof boards. As can be seen from the outside view, the stadium forms one side and the roof of the field house while the ends and west wall are constructed of tapestry brick and conform to the brick coloring of the adjacent North St. School. The roof over the west section of the building is constructed of composition shingles on wood roof boards, giving a rustic appearance. There is plenty of storage space under the bleacher seats adjacent to the heated section for storage of athletic gear and ground tools.

All in all this building represents the utmost in efficiency. The architect and contractor deserve a lot of credit in the planning and creation of such a neat appearing and efficient building. We take pride in the part we played in the equipping of this building with the most modern heating system.

W. G. Horner, of the advertising staff of Consolidated Edison Co. of New York, views the promotional exhibit for the Edison Savings and Loan Association, which recently won national and state awards for excellence. The first public utility savings and loan association ever formed in this country, the Edison Association has total assets of almost $17,000,000 and has helped more than 4,000 employees of the company to home ownership

"Average Employee" Study Forms Basis of Fair Exhibit

AN all-time high standard of living last year was achieved by "Bill Jones," typical of 37,000 employee-producers of gas, electricity and steam in the metropolitan area, according to designs for an employee exhibit at the New York World's Fair 1939 by the Consolidated Edison Company of New York, Inc., and affiliated companies, the first exhibitors to announce employee exhibit plans.

Presenting the first "average employee" picture ever released by the utility group, the exhibit plans cover one of the largest industrial groups in the metropolitan area. Dominated by an heroic sculpture of "Bill Jones,"—a typical service man—the exhibit will set forth in see-at-a-glance fashion the picture of life in the utility system.

Highlights of the Consolidated Edison employee study underlying the "Bill Jones" exhibit include the following:

(1) "Employee standards of living will receive increasing attention in the 'World of Tomorrow.' "

(2) "Today 'Bill Jones' is making a sixth more money for a shorter work week than at the height of prosperity in 1929."

(3) "The odds are better than 2 to 1 that Bill is a member of the Edison Savings and Loan Association, a bridge between employee saving and home-owning groups."

(4) "Back of the Bill Joneses is a $100,000,000 group life insurance program."

(5) "Bill is safer from accidents during his working hours—whether he is down in a manhole or up on a pole—than in his leisure hours after his day's work is done."

(6) "A health rating more than 30 per cent higher than the nation's average industrial worker is given Bill by his medical director; an underlying factor is 'the most comprehensive medical service provided by any utility or industrial corporation in the United States.' "

(7) "Since its foundation in 1912 the Edison group has helped more than 4,000 employees along the road to ownership of more than $25,000,000 worth of homes."

(8) "Bill Jones' standard of living is one-third higher than it was in 1929."

"Since employee standards of living will receive increasing attention in the 'World of Tomorrow,' we have felt that our Fair display should suggest the upward trend in the living standards of our employees today," state the Consolidated Edison World's Fair committee, whose members include Clarence L. Law, Harold S. Sutton, and Henry Obermeyer.

The gas industry is one of the nation's oldest public utilities—and also ranks among the oldest industries which have brought about our modern civilization and developed our high living standards.

Coal Reseach Reported by Bureau of Mines

THE third of a series of annual reports of research and technologic work on coal (Information Circular 7052) by the Bureau of Mines, United States Department of the Interior, has just been released. Compiled by Arno C. Fieldner, chief, Technologic Branch, and chief engineer, Coal Division, the report covers the fiscal year July 1, 1937, to June 30, 1938.

During the year, 8,681 samples of coal, coke and related products were analyzed in the coal analysis laboratory. Of these, 6,646 were analyzed in connection with purchases of coal for the use of Government and certain State institutions and for classification of coals by the National Bituminous Coal Commission, 1,823 related to the research program of the Bureau, and 212 were miscellaneous samples submitted for checking purposes. The Bureau cooperated with the American Society for Testing Materials and the American Standards Association in developing recently adopted specifications and methods of test for coal and coke.

This work includes both laboratory carbonization assays and Bureau of Mines—American Gas Association retort carbonization tests. The laboratory assays are made as routine tests on coals tested in connection with the BM-A. G. A. retort survey work on the gas-, coke- and by-product-making properties of American coals and, in addition, on a number of other coals.

The report covers both coal hydrogenation and liquefaction.

A Lifetime Guarantee For Gas Burners

In a handsome portfolio announcing advertising and sales promotion plans for 1939, the American Stove Company introduces a new and powerful sales weapon—a "lifetime guarantee" of Magic Chef gas burners. This step marks the first time a company has taken full advantage of one of the strongest sales features inherent in gas ranges.

Backing every domestic Magic Chef gas range with a lifetime burner guarantee, the company will issue a certificate with each gas range. The guarantee against burning out or loss of efficiency during the lifetime of the range covers all burners—top, oven and broiler.

The company will continue its national advertising with a dramatic new series carrying large central illustrations plus a story told in pictorial narrative form. The campaign will be augmented by complete tie-in material.

Water Heating Campaign Sales Aids Offered

A NEW sales "portfolio," guaranteed to put punch into the 1939 Gas Water Heater Campaign and boost gas water heater sales to record proportions for utility companies and retail dealers, has just been released.

The attractively prepared sales book, which has been mailed to sales managers of gas companies throughout the country, gives details on the two prize essay contests which are being staged in connection with the campaign.

The sales portfolio contains colorful and dramatic sales suggestions for tie-in with the water heater advertising campaigns and promotional work of the local gas companies. These, it is pointed out, will enable them to bring the story of the Automatic Gas Water Heater—"Your Twenty-four Hour Servant"—more vividly and forcefully before potential buyers in their own territories, and to boost 1939 gas water heater sales—and the gas load—to a new high.

CP Sales Plan Book

EYE-COMPELLING, sales-compelling suggestions for the Spring Campaign of the CP gas ranges, are contained in the Sales Plan Book just released to 12,000 dealers and 2,000 leaders in the gas industry.

The book contains a complete merchandising plan for a Spring Campaign, which is the first of four to be projected in the nationwide promotion of the CP gas range during 1939 under the auspices of the Association of Gas Appliance and Equipment Manufacturers' domestic gas range sales management committee. The Spring Campaign covers the months of April, May and June; the other three campaigns planned are: Summer Campaign (July, August); Fall Campaign (September, October); and Holiday Campaign (November, December).

The literature is presented from "the merchants' point of view," embodying ideas from leading merchandisers of CP gas ranges in all parts of the country who were quizzed for specific suggestions on an effective 1939 program.

That New York career women have a flair for injecting flavor into food and can even cook with their hats on, was evident at a recent all-gas cookery contest in the kitchens of the Governor Clinton Hotel. The same jury of experts who judged the men's amateur efforts a few weeks ago frankly conceded that the careerists were better cooks. On the left, Josephine Antoine, coloratura, Metropolitan Opera Association, wins applause for broiled halves of grapefruit while Thyra Samter Winslow, scenario and magazine writer, preparing a huge pot of bouillabaise on a modern gas range, wins first prize hands down

New Gas Measurement Short Course

Executive Committee plans short course—left to right around table: J. H. Satterwhite, G. B. Lane, C. A. Gibson, Gilbert Estill, R. L. Rountree, J. H. Page, Fay C. Walters, L. G. Rheinberger, Dean W. H. Carson, Don Sillers, W. R. McLaughlin, Max K. Watson, Earl Kightlinger and R. M. Scofield

THE executive committee of the Southwestern Gas Measurement Short Course met at the University of Oklahoma, in Norman, on January 23, to make definite plans for the 1939 school.

L. G. Rheinberger, Sinclair Prairie Oil Company, Tulsa, who is general chairman of this committee, presided during the morning session, and Fay C. Walters, Panhandle Eastern Pipe Line Company, Kansas City, chairman of the Program Committee, presided in the afternoon.

The dates for this year's Short Course were set for April 18, 19 and 20, 1939.

The next meeting of the General Committee will be held in Tulsa, Oklahoma, on March 13, when Mr. Walters will present the Program for approval.

Richmond Utility Man Is Dead

WILLIAM LAWTON, JR., for many years chief of the Bureau of Gas and Water Distribution of the City Department of Public Utilities, Richmond, Va. and a member of the American Gas Association died on January 22. Mr. Lawton was well known among gas men, having served for the past 14 years on the Association's Distribution Committee. He was 59 years of age.

Born in New York State and graduating in 1904 from the University of Delaware with a degree in civil engineering, Mr. Lawton established his home in Richmond in 1906. His first work for the city was the preparation of a complete set of maps showing all the gas mains in the city. In 1908 he became assistant to the superintendent of the water works and clerk of the water committee of the council and later assumed responsibility for the gas distribution system also.

Gas Employees Assist in Emergencies

COOPERATING with the Grand Rapids police and fire departments, are 200 regular employees of the Michigan Consolidated Gas Company in a new farsighted public relations policy of that company.

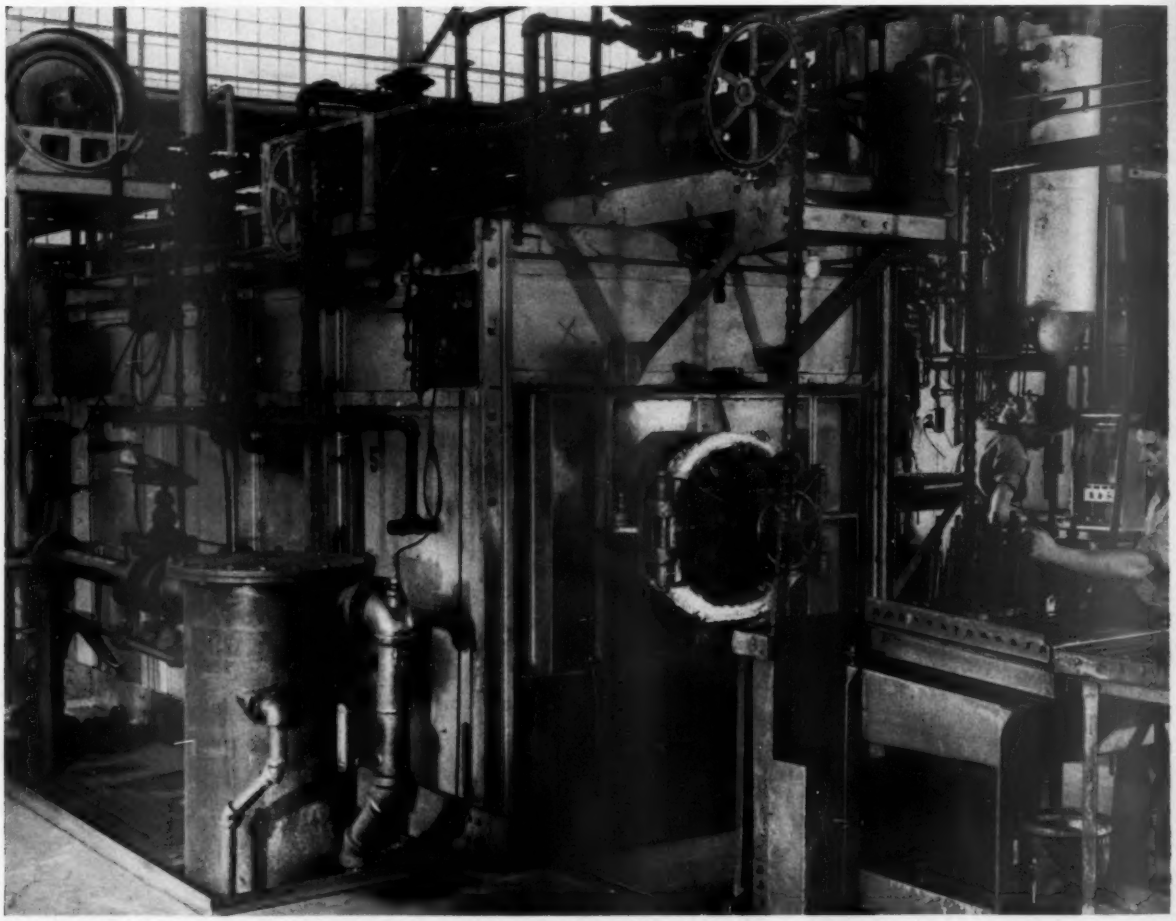
According to a recent announcement in the *Grand Rapids Press*, the men who fix your hot water heater or who work on the gas main in front of your home, may be the men who will some day save your life—if you have been overcome by fumes or smoke in a fire, or while swimming.

Constantly in communication with fire and police departments by police radio, are these men who form the source material for the inhalator squads of the gas company. Three of the regular company trucks, fully equipped with short wave radio and ordinarily used for night service calls and to release pressure on the regular force in day hours, have inhalator equipment available. Two carry this equipment as part of their service kit.

One of the gas company cars answers every fire alarm, day or night, and frequently gives firemen valuable assistance. The police have one inhalator in a police ambulance but occasionally take advantage of the gas company's service. Frequently the gas company squad responds to calls from the sheriff's department to aid in attempting to revive victims of drowning accidents.

According to John Heydenburg, service department foreman, the inhalator apparatus actually is used on an average of twenty times a year, and in one out of four cases the squad is successful in reviving the victim. The one thing, he believes, which most frequently defeats the purpose of the squads is the ignorance of persons first on the scene of a drowning or asphyxiation. If the Schafer method of artificial respiration is immediately applied, persons under water not more than 10 minutes should be revived in almost every case, except, of course, where shock induces a fatal heart attack.

Gas Does More than Ever for Buick in 1939



BUICK'S transmission gears get their toughness in this gas carburizing furnace—a model for scientific heating machinery and advanced fuel engineering. After 88 minutes at 1510° F. in a city-gas-heated inferno where there's nothing to breathe but prepared carburizing gas, the "works" of the gear shift acquires a 0.006" case and is heated up to exactly the correct point for the quench and draw.

Says *Metal Progress*, "Since the introduction of the first gas carburizing unit several years ago, new and improved units have been added, and early in 1938 Buick accepted the gas carburizing method as standard practice in the hardening of all transmission gears. Meanwhile . . . . it was discovered that the gas carburizing furnace could be used for the surface treatment of a variety of miscellaneous parts heretofore hardened by liquid cyaniding. This procedure has been adopted as standard in 1939 production."

Personal AND OTHERWISE

A. F. Cook To Assist in CP Promotion

A. F. Cook

A. F. COOK has been appointed advertising manager of the Association of Gas Appliance and Equipment Manufacturers and will assist in the promotion of the CP Gas Range Program.

For the past ten years, Mr. Cook has been assistant advertising manager of the Philgas Department of the Phillips Petroleum Co., of Detroit, Mich., marketers of liquefied petroleum gases. In this capacity he acquired a practical knowledge of gas, its uses, and of gas-burning appliances. Prior to his association with the Phillips company, Mr. Cook's experience included newspaper, advertising agency, and sales promotion activities.

Brooklyn Union Director

WILLIAM DE KRAFFT, an industrial management consultant, was elected a director of The Brooklyn Union Gas Co. at a meeting of the board on January 26. He resigned from the United States Rubber Company as of June 30, 1938, to take up the profession of consultant in dealing with problems of industrial management. Mr. de Krafft is a director of a number of corporations.

McCarter Awards Made

GEORGE McCULLOUGH, an appliance inspector in the Customers' Service Department of the Philadelphia Gas Works Company and Charles Henry, a fellow employee, received McCarter awards on January 27, 1939. President Lauer, on behalf of the American Gas Association, made the presentations—a McCarter medal together with a certificate to Mr. McCullough; and a certificate of assistance to Mr. Henry.

The following citation was read at the presentation:

"George McCullough, an Appliance Inspector, Customers' Service Department, on October 16, 1938, while investigating a leak complaint on North Sixth Street, forced an entrance into an apartment and found a young woman overcome.

"With the assistance of a tenant in the building, McCullough carried the woman to fresh air and then applied the Schafer Prone Pressure Method of artificial respiration as taught by our Company.

"Charles Henry, a fellow employee, relieved Mr. McCullough in the application of the Schafer method.

"The woman was revived in about 1½ hours and taken to a hopsital."

E. Frank Gardiner Resigns Advertising Post

E. FRANK GARDINER has resigned as Advertising Manager of the Commonwealth Edison Company, Chicago, effective February 1.

Mr. Gardiner has been in public utility advertising work for 18 years. Before going to the Edison Company he was in charge of publicity and advertising for the Midland United Company and its subsidiaries operating in Indiana and Ohio.

Mr. Gardiner served two years as president of the Public Utilities Advertising Association which is affiliated with the Advertising Federation of America. He was a member of the board of directors and chairman of the advertising exchange committee of the association. He had also served two years as chairman of the publicity and advertising section of the American Gas Association.

Prior to entering the public utility business, Mr. Gardiner was for more than 12 years on the editorial staff of Chicago daily newspapers.

Personnel Changes

AT the 1939 sales convention of the Roberts & Mander Stove Company the following changes in personnel were announced. The officers of the Company for the ensuing year will be as follows: Clarence V. Roberts—president; Walter Volkhardt—vice-president; Merle E. Abbott—vice-president; Philip R. Clipp—secretary and treasurer; Jane L. Roberts—assistant secretary and assistant treasurer.

Thomas T. Taylor, who has been sales manager of the company for the past two and a half years, has been promoted to the position of coordinator of operations, and John R. Booth, who has been assistant sales manager, has been promoted to sales manager.

L. A. Farmer Heads Northern Okla.

L. A. FARMER, of Tulsa, Okla., has been named president and general manager of the Northern Oklahoma Gas Co. to succeed the late W. Jennings Young, who died November 26. Mr. Farmer's appointment was effective January 1.

The new president went to the Northern Oklahoma Gas Co. from the Oklahoma Natural Gas Co. at Tulsa, where he had been general superintendent since 1935. Since 1921 he had served Oklahoma Natural in various capacities, acting as general superintendent under Mr. Young when the latter was a vice-president before becoming president of Northern Oklahoma.

New College Director

Frank C. Smith

F. C. SMITH, president and general manager of Houston Natural Gas Company, has been appointed to the board of directors of Texas College of Arts and Industries, Kingsville. The appointment was made by Governor James V. Allred on January 12.

Mr. Smith has worked closely with officials of the college for a number of years. Three years ago, in conjunction with other gas utility executives, he sponsored the opening of a natural gas engineering department in the college. He has served as chairman of the advisory committee for this department since it was founded.

Memorial to H. C. Abell

AT a meeting of the Board of Directors of the American Gas Association in New York, January 25, a resolution honoring the memory of the late Harry C. Abell, a past president of the Association, was presented and unanimously passed. Citing his outstanding achievements and contributions to the gas industry, the memorial read in part:

"In the passing of Harry Clinton Abell on November 24, 1938, the gas industry has lost a loyal and capable leader of farseeing vision, great energy and large accomplishment, and we, his associates, a true and helpful friend. . . . . His work will live after him. The principles he stood for will be reflected in the future activity of the industry he helped create, and his personality will not be forgotten."

British Engineers Invited to Visit World's Fair

A PRINTED circular has been distributed by The Institution of Gas Engineers carrying to its members the invitation of the American Gas Association to visit the New York World's Fair, April 30 to October 30, 1939, and the Golden Gate International Exposition in San Francisco, February 18 to December 2, 1939.

The annual convention of the American Gas Association will be held in New York October 9 to 13 and Monday, October 9, has been designated officially as Gas Industry Day at the World's Fair.

Domestic Sales Up 14% in California

SIGNIFICANT gains in natural gas sales in California were made in December according to reports received by the Association's statistical department. Domestic sales including house heating were up 14 per cent, while commercial sales increased 16.2 per cent and industrial sales rose 7.8 per cent. These gains were made in spite of mild weather which prevailed in most sections of the state.

Gas Hot-Spot!

ALTHOUGH an Earl Carroll night-club show may be "warm" enough in other ways, it takes gas to keep the patrons comfortable. In Mr. Carroll's new Hollywood Cafe and Theatre, a grand display of modern artistry where the movie colony clientele seeks perfection, three gas furnaces are being used in the combined heating and ventilating system.

These units are enclosed in a penthouse on the roof, and warm air ducts lead to outlets in the ceilings. The air is partially re-circulated and is then exhausted through outlets in the walls.

Recent Gems

(From *Gas World*, London)

"I am sending you the order to repair the pipes. The work has been sanctified by the landlord."

"My wife has put my wages tally in the meter and I cannot get my wages till you empty it. Please send at once."

"This job is urgent. Complete if poss. before the war." (The above was received on September 28, 1938.)

"The meter will only be required for a short period. The house has been condemned as unfit for human habitation, and is now occupied by the military."—Extracted from the Liverpool *Co-partners' Magazine.*

Consumption Record Set

COLD weather was believed responsible for a five-year record January 27 of consumption of gas furnished by the Consolidated Edison system in New York. The output was 167,882,000 cubic feet, the most for a single day since February 9, 1934, when the temperature was 14.3 degrees below zero, the coldest ever recorded in New York. January 27 was the city's coldest day in three years.

Penn. State Bulletin

THE Pennsylvania State College, School of Mineral Industries, announces publication of Bulletin 25, Proceedings of the eighth Pennsylvania Mineral Industries Conference, Petroleum and Natural Gas Section, held at the college on May 27 and 28, 1938. Containing 94 pages and 55 illustrations, the bulletin may be secured at $1.00 per copy from the Director, Mineral Industries Experiment Station, State College, Pa.

Mr. Therm Goes to Town

WHILE America has Charlie McCarthy, Betty Lou, Mickey Mouse, Donald Duck and other comic strip creations, it has no character to match Mr. Therm, the No. 1 gas salesman of the British empire. Mr. Therm's ambassadorial and educative work for the gas industry in England has been of such an infectious nature that he has been injected into all sorts of situations and even appeared in the movies. His job is to attract attention and to introduce with a touch of lightness the solid facts behind the gas industry's service.

Mr. Therm's success is summed up by the *Newspaper World*: "The engaging, witty Mr. Therm is one of the few genuine personalities of advertising. What miracles has Mr. Therm performed! By sheer strength of character he manages to impart lengthy information about gas! By the sheer charm of his antics he has made advertising of gas captivating. Mr. Therm has done one of the most difficult things in the world. He has made the public think. . . . . Mr. Therm has destroyed the foolish illusion that every public utility is a soulless corporation. At any rate he has proved that gas companies are the exception. He has endowed them with goodwill so that indifference and even hostility have been turned into warm esteem."

A local bard was so moved by enthusiasm for Mr. Therm that he burst into verse in a Glasgow daily:

"They seek him here, they seek him there, they seek him almost everywhere, but cannot find that funny germ—the damned elusive Mr. Therm. Of parties he's the life and soul. The cooker is his hidie-hole. A gift from Heaven housewives term that handy Mr. Therm. He sticks around and helps you out. You're never stumped when he's about. To iron clothes, or sort your perm, you need the help of Mr. Therm. A light and flimsy chap is he, a fellow full of gas—like me. A hot-head—but there's little herm in wifey's boyfriend, Mr. Therm."

Convention Cruise — March 19-24

Every fireside traveler has "gone down to the sea in ships" in the picture romance and adventure brought to mind in the tropics. Maybe the average gas man has been too busy to make this picture a reality. But the 1939 Southern Gas Association Convention and Southern-Southwestern Regional Gas Sales Conference of the Commercial Section, which will be held jointly on board the luxurious S.S. Rotterdam, make it possible for him to combine business with pleasure and make that dream come true.

For this year's meetings not only afford outstanding programs, surpassing all former ones in interesting and renowned speakers, but also afford a five-day cruise to glamorous Havana, "The Paris of the West Indies."

A few of the headliners on the program include: Conrad N. Lauer, president, American Gas Association; Merrill N. Davis, executive vice-president, S. R. Dresser Manufacturing Company; E. C. Sorby, sales promotion manager, Geo. D. Roper Corp.; Elmer Wheeler, president, Tested Selling Institute; and Ralph W. Carney, vice-president and general sales manager, Coleman Lamp & Stove Co., Wichita, Kansas. H. G. Bonner, president of the Southern Gas Association, will preside at the meetings.

Details of the program and highlights of the cruise have been mailed to interested gas men. Reservations should be made direct with the official transportation agents: Thos. Cook & Son Wagons-Lits Inc., 587 Fifth Ave., New York, N. Y.

AFFILIATED ASSOCIATION *Activities*

Officers and directors of the New England Gas Association at the annual convention, Feb. 16-17. Left to right, first row: A. C. Kenney, assistant secretary; R. J. Rutherford, newly elected president; George S. Hawley, retiring president; J. A. Weiser, vice-president; C. G. Young, vice-president. Middle row: Clark Belden, executive secretary; F. D. Cadwallader, treasurer; R. L. Fletcher, C. C. Ogren, J. L. Johnson, D. H. Levan, F. M. Goodwin, G. D. Yeaton. Top row: G. W. Stiles, H. B. Noyes, E. M. Farnsworth, H. R. Sterrett, N. B. Bertolette, W. C. Bell, F. L. Ball

New England Gas Association

WITH approximately 600 in attendance, the annual convention of the New England Gas Association, Feb. 16 and 17 in Boston, Mass., brought out many excellent papers on a wide variety of subjects. The meeting brought to a close one of the most successful years of the Association, it was indicated by the annual reports of the president, George S. Hawley, president of the Bridgeport Gas Light Co., and the executive secretary, Clark Belden.

R. J. Rutherford, Worcester Gas Light Company, was elected president for the new year. Other officers elected at the meeting are: first vice-president, J. A. Weiser, The Newport Gas Light Co.; second vice-president, C. G. Young, Springfield Gas Light Co.; treasurer, F. D. Cadwallader, Boston Consolidated Gas Company.

Among the principle speakers were Conrad N. Lauer, of Philadelphia, president of the American Gas Association, whose address is reproduced in full elsewhere in this issue, and Alexander Forward, managing director, of the Association. Mr. Forward pointed out that the percentage upturn in the domestic gas business in the New England States in 1938 was nearly twice the percentage increase in the United States as a whole.

The manufacturers were represented by Frank H. Adams, vice-president of the Association of Gas Appliance and Equipment Manufacturers. Mr. Adams made a strong appeal for more cooperation and better mutual understanding of utility and manufacturer problems.

A feature of the meeting was the announcement of sales contest awards. While the contest was divided into classes with winners named in each class, the following achieved the best record of any New England company for appliance sales: Ranges—Buzzards Bay Gas Company with 12.53 units sold per 100 domestic meters; Automatic water heaters—Greenwich Gas Co. with 6.44 units sold per 100 domestic meters; Refrigerators—Buzzards Bay Gas Co. with 2.73 units sold per 100 domestic meters; Kitchen heating—Winsted District of The Connecticut Light & Power Co. with 1.76 installations per 100 domestic meters; Space heating—Buzzards Bay Gas Company with 3.3 installations per 100 domestic meters.

Division chairmen elected for the year are: Accounting—H. W. Greenhalgh, New England Power Association, Boston; Industrial—C. C. Ogren, Eastern Appliance Co., Boston; Manufacturers—G. D. Yeaton, Detroit Michigan Stove Co., Boston; Operating—L. E. Knowlton, Providence Gas Co.; Sales—J. L. Johnson, Providence Gas Company.

Maryland Utilities Association

THE annual spring meeting of the Maryland Utilities Association will be held at the Lord Baltimore Hotel, Baltimore, Maryland, on Friday, April 14.

Three meetings will be held in the morning, one each for the electric, gas and transportation groups. Officials from utility organizations will speak at each of these meetings. A luncheon will be served after the morning meetings, followed by a combined meeting of the three groups.

Further information regarding registration will be furnished upon request by W. D. Haley, secretary, 16 Carroll Ave., Takoma Park, Md.

Oklahoma Utilities Association

AT a recent meeting of the Executive Committee, of the Oklahoma Utilities Association, W. L. Woodward, president, Zenith Gas System, Inc., Alva, Oklahoma, was re-elected chairman of its Gas Division for the year 1939. It is probable that this division will hold two meetings during the year.

Wisconsin Utilities Association

NATIONAL headliners as well as local experts are on the program of the two-day convention of the Wisconsin Utilities Association which takes place March 13 and 14 in the Pfister Hotel, Milwaukee. The convention coincides with the Home Show and time is being set aside to permit delegates to see the latest appliances on exhibit.

Included on the list of speakers at the joint session on Monday, designed to embrace subjects of mutual interest to engineers and salesmen, are: A. M. Beebee, Rochester Gas & Electric Corp.; Lawrence R. Foote, Central Illinois Electric & Gas Co.; Bernard T. Franck, Michigan Consolidated Gas Co., Grand Rapids; W. J. Hodgkins, Lake Superior District Power Co.; Bruno Rahn, Milwaukee Gas Light Co.; and Harry Swenson, The Peoples Gas Light & Coke Company.

A radical departure from programs of other years will be the presentation of the prize-winning papers in the Gas Cookery Contest by the authors.

The technical division has arranged a program of timely subjects. E. C. Brenner, Milwaukee Gas Light Co., will address the group on the gas engine power compressor. A round table session will deal with heavy oil operation.

R. S. Agee, sales promotion manager of the Association of Gas Appliance and Equipment Manufacturers, is a prominent speaker on the Commercial program which will be devoted to sales plans and policies.

CONVENTION CALENDAR

MARCH

Mar. 2-3 **A. G. A. Eastern Natural Gas Regional Sales Conference**
Roosevelt Hotel, Pittsburgh, Pa.

13-14 **Wisconsin Utilities Association—Gas Division**
Pfister Hotel, Milwaukee, Wis.

19-24 **Southern Gas Association—A. G. A. Southern-Southwestern Regional Gas Sales Conference**
SS Rotterdam

27-28 **A. G. A. Industrial Gas Sales Conference**
Hotel Statler, Cleveland, Ohio

APRIL

Apr. 3-4 **Oklahoma Utilities Association**
Hotel Tulsa, Tulsa, Okla.

10-11 **Arkansas Utilities Association**
Hot Springs National Park, Ark.

10-12 **Mid-West Gas Association**
Fort Des Moines Hotel, Des Moines, Iowa

12-14 **Missouri Association of Public Utilities**
Muehlebach Hotel, Kansas City, Mo.

14 **Maryland Utilities Association**
Lord Baltimore Hotel, Baltimore, Md.

17-19 **A. G. A. Distribution Conference**
Palmer House, Chicago, Ill.

20-21 **A. G. A. Accounting Conference**
The Greenbrier Hotel, White Sulphur Springs, W. Va.

22-25 **British Commercial Gas Association—Annual Conference**
Brighton, England

MAY

May 1-4 **U. S. Chamber of Commerce**
Washington, D. C.

2-4 **Pennsylvania Gas Association**
Lodge of Sky Top Club, Sky Top, Pa.

8-9 **Indiana Gas Association**
Fort Wayne, Ind.

8-11 **A. G. A. Natural Gas Section, Annual Convention**
Mayo Hotel, Tulsa, Okla.

8-12 **National Fire Protection Association**
Chicago, Ill.

22-24 **A. G. A. Joint Production and Chemical Conference**
Rochester, N. Y.

24-26 **Association of Gas Appliance and Equipment Manufacturers**
Roosevelt Hotel, New York, N. Y.

JUNE

June 5-9 **Edison Electric Institute**
Waldorf Astoria Hotel, New York, N. Y.

6-7 **Canadian Gas Association**
Hotel Connaught, Hamilton, Ontario

6-9 **The Institution of Gas Engineers, Annual Meeting**
London, England

9 **Empire State Gas & Electric Association—Gas Operating Group**
Park Central Hotel, New York, N. Y.

18-22 **Public Utility Advertising Association, Annual Convention**
New York, N. Y.

19-22 **American Home Economics Association Convention**
Gunther Hotel, San Antonio, Texas.

AUGUST

Wk. 13 **American Transit Association, Annual Convention**
San Francisco and Los Angeles, Calif.

Aug. 23-25 **National Association of Railroad and Utilities Commissioners**
Seattle, Wash.

28-31 **American Dietetic Association**
Ambassador Hotel, Los Angeles, Calif.

SEPTEMBER

Sept. 5-7 **Pacific Coast Gas Association**
Fairmont Hotel, San Francisco, Calif.

9 **Gas Industry Day—Golden Gate Exposition**

20-23 **American Trade Association Executives**
Westchester Country Club, Rye, N. Y.

OCTOBER

Oct. 9 **Gas Industry Day—New York World's Fair**

9-12 **American Gas Association, Annual Convention**
New York, N. Y.

Wk. 23 **National Metal Congress and Exposition***
Chicago, Ill.

* Includes exhibit sponsored by A. G. A. Industrial Gas Section.

Advertising Group Holds Regional Meeting

THE first western regional conference of the Public Utilities Advertising Association was held January 31 at the Hotel Muehlebach, Kansas City, Mo. Approximately 35 persons from nine different states heard the rapid-fire discussion of various phases of advertising.

Major T. J. Strickler, vice-president and general manager of the Kansas City Gas Co., and chairman of the American Gas Association's national advertising committee as well as vice-president of the Association, delivered the address of welcome. Howard F. Weeks, Consolidated Edison Co. of New York, Inc., president of P. U. A. A., reviewed the objectives of that group for 1939.

Kenneth Magers, Cincinnati Gas & Electric Co., conducted a symposium on "Improving the Effectiveness of Copy." Another symposium on "Institutional Advertising" was lead by Harold J. Rowe, of Cedar Rapids, Ia., second vice-president of P. U. A. A. A third round-table discussion on "The Relation Between Sales and Advertising Departments" was conducted by Keith Hartzell, East Tennessee Power & Light Co., first vice-president of P. U. A. A.

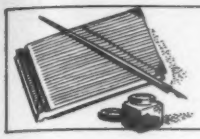
Other speakers on the program were: William H. Hodge, advertising counsel of Chicago; Will C. Grant, Lone Star Gas Co., Dallas; R. M. Oliver, Westinghouse Co., Mansfield, Ohio, and Herman H. Koch, Sioux City Gas & Electric Co., Sioux City, Iowa.

Engineer and Inventor of Gas Devices, Dies

JAMES S. KENNEDY, engineer in the office of the vice-president in charge of gas operations, Consolidated Edison Co. of New York, died February 10 after a long illness. A native of Dublin, Ireland, and a graduate of Trinity College there, he had been with the company 25 years. He was president of the Society of Gas Engineering from July, 1936, until the time of his death.

He was the inventor of the Kennedy telemetric pressure gauge which facilitates control of gas pressure in remote sections of an extensive distribution system. This device is now in general use. He also made a survey of newly constructed waterless holders in Europe in 1924 and on his report executive officers accepted the proposal for the construction of four waterless holders, one of which was the 15,000,000 cubic-foot holder at Hunts Point.

Mr. Kennedy patented a fully developed mechanism for the automatic operation of water gas machines which was installed in the various water gas plants of the Consolidated System and in other large cities. He also invented various mechanical devices connected with the gas industry, including a height indicator for a distant holder.



Accounting SECTION

H. A. EHRMANN, *Chairman*
F. B. FLAHIVE, *Vice-Chairman*
H. W. HARTMAN, *Secretary*

Preparation of a Uniform Pamphlet for Distribution to Publishers of Investment Manuals

By P. M. REDFIELD

The United Gas Improvement Co., Philadelphia, Pa.

THE report of the Subcommittee on Standardization of Questionnaires by G. S. Cremer (The Brooklyn Union Gas Company), chairman, at the 1925 annual convention, after a study of more than fifty questionnaire forms, considered four degrees of standardization, namely (1) subject matter, (2) purpose, (3) specific parts, and (4) complete standardization.

The committee concluded that (1) standardization of subject matter was absolutely essential, (2) standardization of questionnaires for specific purposes, such as for investment manuals, directories and gas associations, was not subject to any serious objections and would save a very considerable amount of labor, (3) standardization of specific parts was desirable to insure uniformity in content as well as in arrangement, and (4) complete standardization of statistical information was the most logical step.

At the 1936 convention, the report of the Statistics Committee, J. L. Conover (Public Service Electric and Gas Company) chairman, stated the committee found that the standard form of "Confidential Report for Insurance Companies" had answered its purpose well and that it was being prepared in an economical and efficient manner. This committee was also of the opinion that a standard method for reporting financial and statistical information to various publishing companies had a decided advantage over the method generally followed of bringing up-to-date proofs submitted by the publishers.

A recent study of statistics of various public utility companies, as reported by the publishers of investment manuals, shows the possibility of preparing a uniform pamphlet, after the end of each year, in such a manner that it will contain all the pertinent information which the various publishers wish to include in their publications.

The contents of such a pamphlet, containing historical, operating and financial statistics of a company, may be briefly described as follows:

Page No. 1—General Information

Organization and History

Date of incorporation, name of State in which incorporated, and a brief description of the history of the company.

Officers

Names, titles and addresses

Directors

Names and addresses

List offices of the Company

Names and addresses of Transfer Offices and Registrars of Stocks

Date and Place of Annual Meeting

Number of Employees

End of year—End of previous year

Number of Stockholders—End of Year

Preferred and Common

Name of Certified Public Accountants

Page No. 2—Property Data

Area Served

Names of boroughs, towns and cities in which operations are conducted and estimated total population of territory served.

Franchises

Briefly describe the franchises under which the company operates.

Statistics

Location of plants; daily gross capacity; storage holder capacity; B.t.u. content; miles of mains, high and low pressure; number of meters installed on lines; number of services, high and low pressure.

Page No. 3—Operating Statistics

Two year comparison of the following operating statistics:

(1) Sales by classes of service
(2) Output—M cu.ft.:
  (a) Manufactured
  (b) Purchased
(3) Maximum day—M cu.ft.
(4) Customers served—End of Period —By classes of service
(5) Number of retail stores operated
(6) Fuel Statistics:
  (a) Gallons gas oil used
  (b) Tons of fuel used for generators
  (c) Tons of fuel used under boilers

Page No. 4—Earnings Statement

Comparative earnings statement for two years prepared in the same form as that included in annual report to stockholders.

Page No. 5—Surplus Statement

Detailed surplus statement for the year prepared in same form as that included in annual report to stockholders.

Page No. 6—Balance Sheet

Detailed balance sheet at end of year prepared in same form as that included in annual report to stockholders.

Page No. 7—Audit Certificate

Copy of report on examination of accounts by certified public accountants, if such an examination has been made. In this connection, it is suggested that the

(Continued on page 120)

Contributed by the General Accounting Committee, H. C. Moore, Jr., Chairman.

Accounting Section Spring Conference

The Accounting Section will hold a Spring Conference at the Greenbrier Hotel, White Sulphur Springs, West Virginia, on April 20 and 21.

The resumation of these Conferences after a lapse of eight years is deemed necessary because of the exceedingly difficult and complex problems with which the industry's accountant is now faced as a result of recent developments in legislation and regulations covering public utilities.

The Planning Committee arranging for this Conference has developed a very interesting program which will be given in detail in the next issue of the AMERICAN GAS ASSOCIATION MONTHLY. WATCH FOR THE ANNOUNCEMENT. Tentative arrangements call for morning and evening sessions for the two-day program with afternoons free for recreational activities.

Complete information regarding the Conference will be sent to all members well in advance.

Inserting machine

Mail Insertion and Postage Metering

By A. W. Fyfe

Consolidated Edison Co. of New York, Inc.

THIS article describes the equipment and method used by the Consolidated Edison Company of New York, Inc., and its affiliated gas and electric companies for handling and dispatching outgoing mail. In this work the following automatic machines are used:

Standard-Johnson Inserting Machines—See Exhibit

In one operation, this machine automatically inserts a bill, return envelope, and sales promotion pamphlet, into each mailing envelope. The exhibit shows the bills and printed matter being placed on the conveyer in the following order, from right to left, bills, return envelopes and sales promotion pamphlets. The conveyer travels toward the operator, where they are inserted in mailing envelopes. The filled envelopes then drop into the tray at the lower left. The empty mailing envelopes are in the upper left part of the machine. As shown in the exhibit there is provision for inserting another item if it is necessary. This machine stuffs approximately 3,000 envelopes an hour. The machine production is constant and is unaffected by the number of items to be inserted.

Contributed by Customer Accounting Committee, H. E. Cliff, Chairman.

Addressograph-Multigraph Model 1522 Folding Machine

This machine folds the bills in half. The desired crease in the folded bill does not fall at any of the perforations on the bill, which would aid hand-folding, thus making this automatic folding highly desirable. Even aside from this fact, the machine-folding operation is many times more rapid than the hand-folding process.

Pitney-Bowes Model AV Postage Meter Machine

This machine automatically seals, imprints meter stamp, post-marks, counts, and stacks the envelopes simultaneously. It further eliminates the possibility of the theft of postage stamps.

Method of Operation

A central location has been established in each borough served in Greater New York, known as a Commercial Center, where all meter reading, billing, bookkeeping, collection, and related activities are conducted for both gas and electric service. Centralized stenographic, filing, and mailing units are also located in these centers.

Where both services are provided by the same company, a combination gas and electric bill is rendered. Where one or more companies of the system serve the borough with a single service, either gas or electricity, the billing and related activities for both companies are handled in the Commercial Center on a coordinated basis, with separate bills being rendered for each company.

Although the equipment used in the mailing unit at all the Commercial Centers has been standardized, the number of machines used in each center varies depending upon the volume of mail dispatched.

At the Manhattan Commercial Center which serves approximately 650,000 active customers through 1,375,000 gas and electric meters, the equipment in the mailing unit consists of two inserting machines, two folding machines, and two postage-meter machines.

About 31,000 bills are dispatched each day from this center. These bills are not received in the mailing unit at one time, approximately 10,000 are received between 10 A.M. and 3 P.M., and 21,000 between 3 P.M. and 6 P.M. The bills received prior to 3 P.M. are completely machine-stuffed, but because of the volume of bills received after 3 P.M., it is necessary to hand-stuff approximately 7,000 of these bills.

Customers' bills and correspondence is forwarded to the mailing unit which is responsible for the mailing of all outgoing matter. Upon receipt of the bills in the mailing unit, they are placed in the folding machine. After the bills are folded, those which are machine-stuffed are then placed in bulk in the inserting machines with a supply of outlook mailing envelopes, return envelopes, and sales promotion pamphlets. The inserting machines are also used to pre-stuff mailing envelopes between the hours of 10 A.M. and 3 P.M. with a sales promotion pamphlet and return envelope for those bills which are hand-stuffed during the afternoon peak period.

Bills with stickers attached, multiple bills which are stapled, collection notices, customer correspondence and any other outgoing mail, are inserted by hand and then run through the sealing and stamping machines in the same manner as the regular bills.

In order to avoid a peak at the end of the day, the mail as it is completed is put into mail bags which are furnished by the post office and delivered by company truck on a regular schedule during the day to a post office adjacent to the Commercial Center.

It has been determined that a clerk can stuff approximately 850 envelopes an hour, whereas by the use of automatic equipment, the production is approximately 3,000 envelopes an hour per machine. In view of the foregoing, it is readily seen that the use of automatic machines for the mailing operations of a large company is efficient and satisfactory.

Join the Swing to Gas Heating for New Homes

H. G. Schaul

Topping all previous records in attendance, the Mid-West Regional Gas Sales Conference in Chicago, Ill., Feb. 9-11, was an outstanding success. More than 800 delegates and guests from 22 states and Canada received inspiration and new ideas from the program. L. W. Johnson, The Peoples Gas Light & Coke Co., Chicago, presided as general chairman of the conference.

This issue of the MONTHLY carries two of the important papers presented at the conference: the accompanying one by H. G. Schaul, chairman of the House Heating Committee, and a stimulating discussion of the gas refrigerator market by R. J. Rutherford, chairman of the Refrigeration Committee. Other papers will be discussed in the April issue.

By HERBERT G. SCHAUL*

Westchester Lighting Company, Mt. Vernon, N. Y.

THERE is no magic wand, or secret success formula to give you for the industry's success in selling gas heating to new homes. Lyle Harvey, in talking before our Metropolitan Gas Heating and Air Conditioning Convention, on "New Developments in Sales Methods" emphatically stated that there were no new selling developments under the sun. The oldest and best one to use, in his estimation, is "Good Horse Sense and Hard Work." I can only give you a program which our company has successfully used over 3½ years.

The Westchester Lighting Company is a subsidiary of the Consolidated Edison Company of New York, and is a combination company of 137,000 gas meters and 165,000 electric meters. Our county covers 450 square miles and has a population of approximately five hundred thousand people. There are 4600 active gas house heating installations on our lines. We supply manufactured gas of 540 B.t.u. per cubic foot and have a 75 cent per thousand cubic foot water heating rate and a 50 cent per thousand cubic foot house heating rate (single meter for all uses).

Growth in New Homes

The following table shows the rapid growth of new house sales within the last few years:

NEW HOUSE SALES

	Year	*Number of Sales*
Starting September	1935	9
	1936	161
	1937	385
	1938	468
Total		1023
	1939 quota	600

We are reaping the profits now of the many contacts made in the beginning. Sales managers and operating executives must be patient for the results of new house sales, especially if competition is keen. Rome wasn't built in a day!

The Architects' and Builders' section is made up of a manager who acts as a salesman as well, together with two district salesmen and one departmental assistant. The new house sales made in our territory have been made against stiff oil competition. There are literally 20 oil salesmen to our one gas salesman.

It is interesting to note that the oil saturation in Westchester County amounts to 36 per cent of one, two and three family houses. Oil sells from 6½ to 7 cents per gallon, and hard coal at twelve dollars per ton. We originally had a ratio of eight oil burners to one gas unit. The ratio now has changed to approximately three oil burners to one of gas. I hang my head in shame when reviewing the change in figures of Minneapolis, Minn., in which the original ratio was four oil burners to one of gas which, since the introduction of mixed gas, has changed to two gas units to one of oil. They certainly deserve a lot of credit for a fine selling job.

Recommended Program

1. I believe that if you can secure 50 new houses a year in your territory, it is sufficient reason to warrant a special man covering the work. This man may be secured from your own selling ranks at the present time, without any additional expense on your part. It has been found impossible to have the regular house heating salesman cover the new house work efficiently, at the rate of present construction methods throughout the country.

2. Architects, builders, and realtors should be contacted periodically by the special representatives. It is physically impossible to secure adequate coverage with the present selling force.

Architects Influential

3. The most missionary work should be spent on the architects. They, in my opinion, are the most influential in the sale of gas house heating equipment. They can either "make" or "break" a sale. The architect in the main, is retained for good judgment, ability to make a pleasant-looking house, and act as a consultant in the building of same. He, like everybody else, sticks to tried products. If he has built several houses and used oil therein, he naturally knows the operating results and will stick to oil in any future specifications.

Architects are ethical, like doctors, and they don't like people, especially gas men, jumping over their heads and running to the owners direct. It may be necessary for you to lose some sales to these architects in order to gain their confidence in your product. I repeat, by no means, go over the head of the architect to the owner in order to present the gas story.

Give the true facts, and sell your job clean. You will have ample opportunity to offer other services, such as kitchen planning and lighting in order to get in the good graces of the architects.

We have found another very effective entry to the architects and builders, and that is in presenting them with an Architects and Builders File, affording them sufficient information to quote properly on the equipment.

4. Advertising cooperation for large developers. In order to secure proper coverage in the building field, large reliable developers should be encouraged. The gas companies can cooperate with these builders in giving them advertising space in the daily papers. It gains the confidence of the developer, that some one else beside

* Chairman, House Heating and Air Conditioning Committee, Commercial Section.

Address before Mid-West Regional Gas Sales Conference, Chicago, Ill., Feb. 10, 1939.

himself, is willing to shoulder some of the selling expense. The advertising expense is, and should be, a small item in your advertising budget. It creates the interest of other builders to take on the gas load in order to gain your advertising cooperation.

We have recently tried a monthly Directory of Residential Building Development. The Directory is offered to consumers contemplating the purchase of a newly constructed house in the Consolidated Edison territory utilizing gas heat. It shows a picture of the house, listing the price range, number of rooms, architects' and builders' names, and town location. Already there are indications that it is an incentive to other builders to have their houses listed in the publication. In this way, they gain additional free advertising, and touch a new market of prospective buyers. The plan has proved very effective.

5. Model Houses. In some localities, model houses have been overdone, but, certainly, the worthwhile projects should be encouraged to use gas for all four uses if possible. It may even mean a small contribution on your part to encourage this cooperation, but again the expense is infinitesimal for the value secured.

6. Lawn Signs. Lawn signs afford any gas company wherein gas is used for house heating, at least three months of excellent advertising at low cost. This is an old idea but has plenty of merit, and has been used effectively throughout the country.

7. Architectural County Society. I spoke of cooperating with the architects, and in our own locality, the manager of our Architects and Builders Division is an honorary member of the county architectural society. In fact, the society uses our company auditorium for their regular monthly meetings. We assist them, too, by advertising in their regular monthly magazine.

8. Real Estate Operators. Here is one group of men who can be of assistance in the reconditioning of old property and rentals of same. If you can convince this group that you have a worthwhile project in gas house heating, then you will have gone a long way in helping your cause.

Sales Program Succeeds

The companies throughout the country utilizing the above general procedure in securing the gas for new homes have been most successful. Sales range between 20-40 per cent of the total house heating sales in 1938. The following figures of but a few companies having a successful new home campaign are proof of this statement.

	No. of New Home Installations
Detroit, Mich.	2960
Washington, D. C.	2550
Lubbock, Texas	1190
Pittsburgh (2 companies)	956
Cleveland, Ohio	897
Public Service of N. J.	800
Atlanta, Ga.	733
Minneapolis, Minn.	500
Westchester Lighting Co. (Mt. Vernon, N. Y.)	468
Brooklyn Union Gas Co.	425
Chicago, Ill.	336
Long Island Lighting Co.	300

Value of New House Sales in Protecting Other Basic Loads

Your chairman has asked me to tell you what happened in other homes utilizing gas for only part service. Let me give you a few figures which prove what happens to the basic load when gas house heating has not been secured in new homes.

Where *GAS* was used for House Heating—100% Gas for Water Heating
Where *GAS* was used for House Heating— 99+% Gas for Cooking
Where *GAS* was used for House Heating— 50% Gas for Refrigeration

Where *OIL* was used for House Heating— 99+% Gas for Cooking
Where *OIL* was used for House Heating— 1% Electricity for Cooking
Where *OIL* was used for House Heating— 80% Electricity for Refrigeration
Where *OIL* was used for House Heating— 20% Gas for Refrigeration
Where *OIL* was used for House Heating— 90% Oil for Water Heating
Where *OIL* was used for House Heating— 10% Gas for Water Heating (warm air jobs only)

The above figures represent what happened in our own territory. A further check is made by figures supplied by the Washington Gas Light Co. in a talk by James E. West before the Metropolitan Gas House Heating and Air Conditioning Council recently as follows:

	No. of Appliances Installed	*% of Total Available*
Ranges	4289	87.6%
Water Heaters	3673	75.1%
Refrigeration	1670	34.2%*
House Heating	2561	52.5%

* Refrigeration 55.2% including Apartment Houses.

The moral of all these figures points to but one thing. *Gas house heating in new homes definitely saves the cooking, water heating, and refrigeration load.*

Progress in House Heating

I would recommend, for your reading, a most inspirational work done by Paul Ryan, of the American Gas Association, entitled Statistical Bulletin on "Comparative Data on Gas Fired Central Heating Installation 1937-38." These figures should act as an inspiration to you. There are 2,225,000 homes in the United States heated with gas. These figures are made up of:

Central House Heating Installations	825,000
Unit Heaters and Space Heaters	1,400,000
Total	2,225,000

It is interesting to note that the figure of 825,000 homes (Central House Heating) represents a gain of 18.9%. It also means that one home out of 10 (in cities) is heated with gas. The installations in manufactured and mixed gas show a pronounced gain for the year of 19.2 per cent. How many other businesses show such a gain? Of the 160 manufactured and mixed gas companies reporting sales for 12 months ending July 1, 1938, 32,632,981,000 cubic feet have been sold for house heating.

By way of comparison, let us see what our competitor, the oil burner dealers, have shown during 1938. The following figures taken from the January 1939 issue of the *Fuel Oil Journal* give a complete picture of that situation.

RESIDENTIAL OIL BURNERS SOLD

1938	
Conversion Burners:	
1937	193,057
1938	135,646
	29.7% Decrease
Boiler Burner Units:	
1937	14,431
1938	10,943
	24% Decrease
Warm Air Units (Winter Air Conditioning)	
1937	11,386
1938	8,686
	23.7% Decrease

OVERALL DECREASE 29%

There is a definite trend today, throughout the country, in the building of small homes that range anywhere between $3,000 to $6,000. These small homes are a "natural" for gas heat. In many instances, warm air furnaces with blower are utilized for the heating of these buildings. Since the homes are small and compact, and thoroughly insulated, they present a small operating cost with gas. The majority of them are built without basements and therefore a utility room in the center of the house is used for the heating equipment. Surely the noise from an oil burner in such a compact house would never be tolerated. These oil burners are too large, noisy, and costly for the small jobs. The high upkeep and servicing on these burners goes on year after year, irrespective of their size and type of home in which they are installed. Moreover, they present a low operating efficiency due to their size.

The gas companies not concentrating on these small houses are certainly missing a bet. You ask, "Why, Gas Heat in New Homes?" Gas *must* go in new houses because the buyers of new homes today, in visiting model houses throughout the country, are impressed with the equipment used therein. In their estimation, the new homes represent the very latest and modern type of building and equipment. If oil house heating and water heating equipment is found in these model homes, there can be but one answer for the prospective buyer; to believe that oil is the modern heating

method. Therefore, secure the *All-Gas* house to impress potential buyers of the latest thing in home utilities.

Gas House Heating in 1939

Bernard L. Johnson, editor of *American Builder*, forecast a constructive program approaching the 1939 level of 500,000 nonfarm residential units, public and private. Forecasting the best year for contractors and operative builders in a decade, he foresees a 25-35 per cent increase in private residential building. Moreover, he points out, the U. S. Housing Authority's huge program of 50,000 to 75,000 units will get underway. It is estimated that 325,000 to 350,000 family units were built last year. How many of the 1939 *new homes* will you secure?

In summation, you are all familiar with the general, and I hope, nationally accepted slogan of *"Join the Swing to House Heating by Gas."* Nothing more appealing to direct action could be placed in so few words. Therefore, why don't *you Join the Swing to the New All-Gas House*—it is rightfully yours with a little effort on your part. *Don't let anybody take this load away from you!*

Swing it to Gas!

Servicing Committee Meets

C. S. Hazel

SERVICING activities with particular reference to the relation between servicing and sales promotion are being studied by the Appliance Servicing Committee of the Commercial Section. At a recent meeting, C. S. Hazel, of The Philadelphia Gas Works Company, chairman of the committee, outlined the scope of the committee's activities for the year.

Chairman Hazel tentatively listed the following items for the attention of the committee: 1. Accumulation of field data bearing on mechanical and other faults based on the analysis of service calls for gas ranges, water heaters and other types of appliances where evidence points to a need of some change in design; 2. Possible scope of work on customers' premises when turning on gas; 3. Coordination of sales efforts with appliance servicing work; 4. Factors governing specialization in appliance servicing work; 5. Factors affecting cost of servicing automatic water heaters by types.

A special subcommittee under W. T. Shinholser will undertake a study and report on recent trends in servicing policies. Another subcommittee headed by W. H. Weber will report on the subject of "Coordinating Sales Efforts with Appliance Servicing." Leo P. East was appointed chairman of a subcommittee to study factors governing specialization in appliance servicing work.

Midwest Home Service Meeting Stresses Sales Aids

PROOF that home service is an integral part of the sales organization was evidenced in an excellent attendance at the home service meeting in connection with the Midwest Gas Sales Conference in Chicago, February 11. Lucille Hall of the Michigan Consolidated Gas Company at Grand Rapids presided.

"Questions Please—A Quiz of the Experts on Kitchen Planning" met the response of the audience in questions submittee to Harry Swenson, The Peoples Gas Light and Coke Company, Arthur Blitz, Wisconsin Public Service Company at Sheboygan, and Kenneth Browne, Milwaukee Gas Light Company.

"Hot Water in the Home" was a presentation developed through a talk on how home service can aid in water heater promotion by Betty Boyle, Gas Service Company, Kansas City, followed by a most entertaining skit on a hot water discussion during a call at a customer's home. This was given by Betty Jane Reeves in the character of Mrs. McGillicuddy and Jane Marshall, the home call girl from the gas company.

Mary Louise Hurster, Laclede Gas Light Company, pointed out new ways in which home service has made contacts through demonstrations to civic organizations of both men and women in St. Louis.

"Service and Home Service" was a particularly interesting paper presented by George Ludwig, head of the service department in the gas company at Grand Rapids. Mr. Ludwig brought out many ways in which service and home service are helped through a program of mutual understanding.

In announcing the 1939 Home Service Conference, Gladys Price of the Southern California Gas Company at Los Angeles extended an invitation for a large attendance from the midwest to cooperate with the general plans of the Home Service Committee.

At a luncheon program, the details of which were handled by C. A. Luther of The Peoples Gas Light and Coke Company, Miss Hall presented a discussion of home service promotion of the C.P. Range program.

F. M. Houston of the Rochester Gas and Electric Corporation described a plan by which Home Service Rangerettes can tie in with the general CP Ranger plan. Further endorsement of this program was given by Gladys Price and R. S. Agee of the Association of Gas Appliance and Equipment Manufacturers.

"The Human Side of Home Service," as told by Vera Carter Ault of the Public Service Company of Colorado, brought out the many ways in which home service contributes to the personal life in the community.

"Scratch Pad Notes on Home Service," presented by L. W. Johnson, Chairman of the Sales Conference, brought forth additional ways in which home service can add to its ever increasing contacts through service to sales.—J.McQ.

$2,000 in Cash Offered for Water Heating Essays

Here is your opportunity to win a handsome cash award in a simple, easy manner. All you have to do is to write an essay on one of two subjects. If You Are a Utility Employee the subject of your essay must be: "The Value of the Water Heating Load and How It May Be Secured."

If You Are a Plumber Dealer handling gas water heaters, the subject of your essay must be: "What the Promotion of Automatic Gas Water Heaters Has Done for My Business."

PRIZES FOR EACH CONTEST

First Prize	$500
Second Prize	250
Third Prize	150
Fourth Prize	100

All essays must be in the hands of the Water Heating Committee, American Gas Association, 420 Lexington Avenue, New York City, by April 1, 1939. Awards will be announced May 1, 1939.

All utility company employees and plumber-dealers handling water heaters are eligible to enter this contest, except members of the Water Heating Committee. There is no restriction on the number of words used. Awards will be based entirely on the excellence of the paper. Manuscripts should be written on one side of the paper only and may be typewritten or handwritten. All essays become the property of the Water Heating Committee and may be used at their discretion.

Converting Small Bakeries to Gas Brings Profitable New Load

By J. B. MOORE
The East Ohio Gas Company, Cleveland, Ohio

J. B. Moore

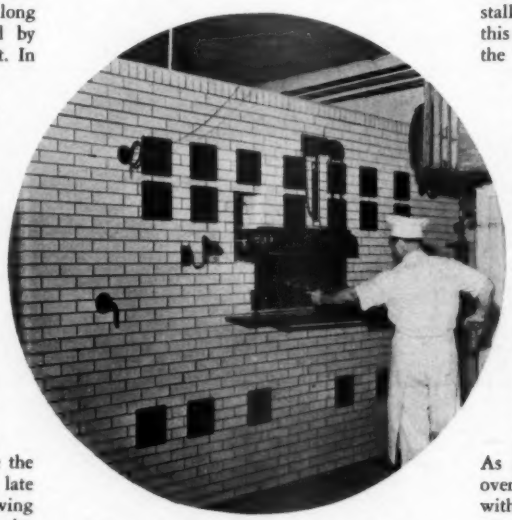
THE desirability of acquiring more of the potential gas load represented by the baking industry, particularly with reference to the specialty or small corner bakery, has long been recognized by our management. In the early days, our company enjoyed most of this load, but a large portion of it was lost some years ago because of conditions beyond our control. However, in 1935, it was decided to make a determined effort to recapture as much as possible of this lost but long-desired commercial baking business.

All Bakeries Studied

First, a complete survey was made of all the bakeries in the Cleveland area to find out exactly what possibilities there were in this field. A form sheet was used, as shown in the accompanying illustration, and an individual call was made on each baker to acquire the necessary data. The survey, completed late in November 1935, disclosed the following pertinent information: Of the 361 bakeries covered, 207 were using gas. The remaining 154 bakeries had either a single oven or a battery of ovens using coal or coke. There were 186 brick peel ovens in this latter group which were either fired with coke or stoker-fired. There were also 27 sheet steel peel ovens of various makes which were in the same category. The field looked so promising it was decided to initiate a campaign to convert to gas as many as possible of these 213 ovens.

Fortunately, we were able to obtain an oven with which to experiment in one of our large bakeries where the major portion of the work was done on gas-fired continuous or reel ovens but where there were still several coke-fired brick peel ovens in use for emergency purposes. A gas installation was made in one of these ovens during the latter part of November, 1935.

Starting with the premise that it was necessary to have a thoroughly clean oven, we spent two days on cleaning and scraping all the flues from top to bottom and then going over them with a powerful vacuum cleaner. We next added six inches of loose mineral wool to the top of the oven and, after the fireboxes had been thoroughly cleaned, we placed two rows of insulating brick on top of the grates and cemented them in place.



Martanovic Bakery—average monthly gas consumption, 60,000 cu.ft.

We had decided to use low pressure atmospheric burners of the venturi type with flame retaining nozzles because of their simplicity, lack of complicated adjustment and quiet operation. Accordingly, we installed three 1½" burners in each firebox, this particular oven having two fireboxes in the front. We also placed a checker wall of brick in the firebox about 24 inches from the face of the nozzles.

The gas input was set at three cubic feet per square foot of hearth area per hour by means of a regulator installed ahead of the burners. In this particular oven the input came to 456 cubic feet per hour. Finally, we baffled the flues at the top of the oven just behind the dampers and set the baffles so that we obtained an Orsat reading of 8.2% CO_2 in the flue gases leaving the oven.

After making some minor adjustments during the first few days of oven operation, we reached a point where the bakers were perfectly satisfied with operation and performance. As a matter of fact, they found that the oven baked much more evenly with gas than with coke firing, and that the temperature was much more readily controlled.

Over the period of the first month the average operating cost was $1.25 per day. No figures were available on the exact amount of goods baked during this period since the oven was used for many varieties of goods, mostly special orders. However, the bakery management was well satisfied with the per diem cost and felt, when all factors were considered, that it represented a saving over coke firing.

The performance of this oven was carefully watched for a year—and no concerted effort was made to convert other corner bake shop installations until we were quite sure all the "bugs" had been eliminated from the original conversion. In September 1936 we converted another oven at this same plant. Now we felt that we had sufficient data to go ahead with our project.

We decided that, at least for the first few installations, we would allow the bakers a trial period of sixty days—without any downpayment or contractual obligation on

• The corner and specialty bakery load is a year-'round one in a profitable rate bracket. It pays to go after this load and here Mr. Moore presents the evidence.

• The East Ohio Gas Company, in 1937, decided that it could convert to gas at least half of the 213 coal and coke fired peel ovens it surveyed in specialty bake shops in the Cleveland area. Already, with straight-forward sales-engineering methods, the company has converted over 30 coke or coal ovens, and replaced 12 with new gas-designed apparatus. As a result, that utility enjoys a steady new load of 3,600,000 cubic feet of natural gas per month.

• What can be done in Cleveland can no doubt be done elsewhere.

the equipment installed until the user had decided whether or not he wanted the installation kept in. Each installation was handled on a time-and-material basis. We found that the average cost of cleaning, insulating and converting an indirect fired brick type peel oven was in the neighborhood of $150 provided it was not necessary to run much additional houseline. A submeter was installed on each converted oven and a daily record of baking costs was kept so as to avoid any high bill controversies.

First Installation Successful

This procedure was followed in our first corner bakery installation, which was made early in 1937. It happened to be a specialty bakery with two brick peel ovens hand-fired with coke. This first conversion was successful instantly. We attained a daily operating figure of $1.20, and as this baker computed his coke costs on the basis of four to five tons per oven per month, it was indicated that we were operating at a cost a little less than that of coke.

This bakery produces a wide variety of heavy hearth goods, especially rye breads and pumpernickel, and also the usual line of pies, pastries, rolls, etc. The bakers reported that the oven was far more flexible than when coke was used and baked more evenly.

Following the lead set by the two experimental conversions and the one commercial conversion, we have since made about 30 commercial installations. The great majority of these have been in brick peel ovens, but several have been in sheet steel ovens where we followed the same installation procedure as adopted for the brick ovens. Every one of the 30 installations was made on trial, and only one was taken out. In this particular case the removal was caused as much by a faulty oven as by reason of high cost of operation. When this oven is repaired, it is quite possible we shall reinstall the gas burners.

At the present time there is only one trial installation in force. All the other jobs have been accepted by the bakery owners and are either paid for completely or are in the process of payment. Some of the installations were paid for in cash after the termination of the trial period, but the majority were paid for in twelve monthly installments, usually at the rate of $12.50 a month. The first few installations were put in by our own men, but all the others were installed by contractors working under our supervision.

In every case daily readings were taken on the submeter for the first two or three weeks. This daily contact with the baker, as much as any other factor, was most important in ultimately selling the installation—for, whenever the daily costs ran higher than anticipated, it was possible through frequent comment to persuade the baker that the advantages he was experiencing in using gas more than outweighed the increased cost of operation.

On the basis of cost studies made for the installations converted to date, we have found that the average gas consumption ranges from 15,000 to 18,000 cubic feet of gas per ton of coke previously used, depending upon the design of the oven. This is for 1100 B.t.u. natural gas at 60¢ per thousand cubic feet compared with coke selling at the present time at $8.25 a ton.

We have found also that oven conversions usually lead to acquiring other portions of the bakery load through the installation of gas-fired steam boilers, space heaters, water heaters, etc. In nearly every instance where an installation was made in the bake oven, we subsequently obtained additional load from some other part of the shop.

All the work is being handled by one salesman who makes all the contacts and takes all the daily readings after installations are made. This salesman also supervises each installation and handles all dealings with the bakery. This seems to be an important factor in obtaining the confidence of the bakers and is most conducive to obtaining additional load later.

At the present time we are mailing broadsides to those bakers whom we have been unable to contact so far, and we expect to continue working toward more conversions until we have obtained at least half of the available load. In many cases where the baker is only renting or where business is not good, we have not been able to interest him at all. In many other cases, where stokers are in use, we have found it difficult to obtain the load—although there are three stoker replacements in the 30 ovens so far acquired. All in all, however, we have found very few bakers who hesitate about having gas installed if they are at all able to afford the conversion.

Dembovitz Bakery with two ovens uses 180,000 cu.ft. of gas in an average month

Sokola Bakery swells the total consumption 85,000 cu.ft. per month

We make a thorough inspection of each converted oven every six months, and at that time run Orsat tests, reset baffles and make such further adjustments as may be necessary. We find the average monthly consumption of an oven of the converted type varies from 55,000 cubic feet of gas to 120,000 cubic feet of gas. The load is constant the year 'round, and is, in every way, most worthwhile.

Most of the installations have been made in bakeries where there is but a single oven. Our largest conversion to date is a battery of five ovens for which the total load has since averaged 600,000 cubic feet per month. The total monthly increase in our commercial load as a result of these 30 installations is 2,673,000 cubic feet, which includes the increase derived from boiler and space heating installations directly resulting from satisfactory oven installations.

Coincidentally with our peel oven con-

1. Name.....*A. Chenchinsky, Bakery*.....
2. Address.....*850 East 105th Street*.....
3. Manager or Owner.....*A. Chenchinsky*.....
4. Kind of Oven: Peel (Direct fired).....(Indirect fired).....*x*.....
   Rotary Hearth.....
   Reel or Rotary Tray.....
   Continuous Hearth.....
5. Number and Make of Ovens.....*Peterson 2 fire doors—rear fired*.....
   .....*Peterson 1 fire door—rear fired*.....
   3—*charging doors*.....
   Night
6. Hours Operated.....*2 3 hrs*.....Operating Temperature.....
   Time to Reach Temperature.....
7. Size of Oven..... Wall Thickness....*Brick 9"*....Insulation....*No*....
   Size of Hearth.....*10' x 12'*.....
   Size of Fire Doors.....*11" x 13"*.....
   Size of Ash Doors.....*No door*.....
   Size of Flue.....*14"*..... Location of Flue.....*Rear*.....
8. Kind and Quantity of Fuel Used:.....*Coke—3 ton/month*.....
9. Cost of Fuel.....*$7.25 to $7.50 per ton*.....
10. Condition of Oven.....*Good*.....
11. Condition of Flues.....*Needs cleaning*.....
    When cleaned?.....*Never*.....
12. Character of Goods Baked.....*Bread—Pastries*.....
    Bread (amount)..... Cake..... Pies.....
13. Interested in New Ovens?.....*Oven too large for work done*.....

(Gas) Operating
Steam Boiler: Size....*2 HP*.....Make.....*Vertical Tubular*.....Pressure.....*60*.....
Height of Tubes.....*36*.....Size of Tubes.....*1½*.....No. Tubes.....*9*.....
Flue Size.....*8" to 4"*.....
Size of Boiler Fire Door.....*6 x 10*.....Size of Boiler Ash Door.....*4 x 7*.....
Diameter of Fire Box.....*18"*.....Insulated?.....*No*.....
Size of Gas Service.....*1½*.....House Line.....*1½*.....Meter.....*20 lt.*.....

Form sheet used in bakery survey

versions, we have added at least a dozen gas-designed reel or travelling tray ovens—in most cases through contacts originally made with a view to converting existing brick ovens. Since some of these new gas-designed installations were made in relatively large bakeries, we estimate that the additional load from this additional source is running up to 1,000,000 cubic feet per month.

From our experience in the last several years with this type of business, it appears to us that the most important points in making conversions of coal- or coke-fired ovens are: (1) carefully supervise the installation, (2) insist on a thoroughly clean oven and the intelligent application of insulation, (3) make many and frequent calls on each bakery both before and after the installation, with the idea of gaining the confidence of the baker and thus promoting his good will. We believe from the results obtained thus far that it has been a very beneficial campaign productive of a considerable increase in business with a minimum of expense.

Air Conditioning Conference

TECHNICAL and non-technical phases of air conditioning and exhibits of the latest equipment as displayed by manufacturers will share the spotlight at Oregon's second annual Air Conditioning Conference at Corvallis, March 23 to 25, inclusive, according to general chairman Earl C. Willey, assistant professor of mechanical engineering at Oregon State College.

The conference, sponsored by the College with cooperation from manufacturers of heating, air conditioning and allied equipment, is held at the school of engineering.

Attendance last year was close to 200, with excellent representation from manufacturers, utilities, and the trade. Even more are expected this year with a promise of nationally known speakers and more extensive equipment exhibits. Technical and non-technical sessions are an innovation this year.

Manufacturers interested in arranging exhibits are requested to get in touch with Earl C. Willey, Oregon State College, Corvallis, Oregon; or Thomas E. Taylor, consulting engineer, 510 Southwest 3rd Avenue, Portland, Oregon.

GOING AHEAD *with Industrial Gas*

Eighty-five per cent of hotels over 50 rooms in size do SOME of their baking, and 69 per cent do ALL of their baking. Do the hotels in your city all bake with gas? The new gas bake ovens bring this valuable load closer than ever within our reach.

In new methods developed recently at University of Pittsburgh School of Medicine, hot water is used for producing artificial fevers of 104 to 106 degrees within patients' bodies in the treatment of a number of diseases.

Bill Reimers of Public Service Electric and Gas Co. of N. J. brings to attention a new fish smokehouse (25' x 25' x 20') which uses 6 changes per hour of gas-dehumidified air (45% R.H. and 85° F.) in preference to fire within the smokehouse. It differs from the only other gas air-conditioned fish smokehouse we know of in that it is many times larger and does not recirculate.

Interim Bulletin 2FI on "The Use of Gas for Heating Chicken Brooders" by Tom Halloran's Food Industries Committee has really caught on. Request to the Industrial Gas Section for copies are piling in at a surprising clip. And at least five farm and poultry paper editors have evidenced editorial interest. Have you read it?

New standards of economy are being established in applications of city-gas-oxygen torches to metal cutting, especially for scarfing, scaling and deseaming. It has been found that one cu.ft. of natural gas can do the job of one cu.ft. of acetylene in such work. Recently stimulated interest in this field promises results. It will pay you to follow them.

There are 11 national organizations of hotel men who are concerned directly with preparing and serving food—showing how seriously hotel men take this end of their business.

The Bureau of the Census estimates that in 23 of the largest cities 28.8% of the total food business is in hotels and restaurants.

At the Conference on Industrial Gas Sales, Hotel Statler, Cleveland, Monday and Tuesday, March 27 and 28, Chairmen Bellamy, Parker, Halloran, Hawkins and Cronkright, of the Industrial Air Conditioning, Ceramic Industries, Food Industries, Non-Ferrous Metals and Ferrous Metals Committees, respectively, promise to uncork data on startling new gas applications in their fields. They'll do it in simultaneous and adjacent Panel Discussions. Plan to get into them!

A Natural Gas Odorizer for Domestic Customers

By Louis Shnidman and Leo East

Rochester Gas & Electric Corp., Rochester, N. Y.

SEVERAL months ago our company was faced with the problem of serving certain domestic customers from a natural gas transmission line carrying unodorized natural gas. We felt that it was most important that the gas supplied to residential customers contain sufficient odor so that a small leak could be easily detected. In considering an odorizer for individual domestic customers, we set up certain requirements. These requirements served as a guide for our selection of the odorizer. They are as follows:

1. It should provide adequate odorization.
2. The odorization should be uniform per unit volume of gas at various flows.
3. It should require little attention.
4. The contents should be sufficient to last at least one year.
5. The construction should be simple and inexpensive.
6. It should be readily replaced.
7. It should be constructed in such a manner that increased capacity can be easily obtained.

After some preliminary laboratory tests with various odorants, it was decided that Calodorant would best serve our conditions. Using Calodorant we set up the following additional requirements for the odorizer:

1. It should introduce approximately 3 gallons of Calodorant per million cubic feet of gas.
2. The amount of odorization should be adequate for a maximum flow of 50 cu.ft. per hour.
3. Excessive odorization should not occur when a minimum flow of 2 cu.ft. per hour is used.

A search was made to determine whether or not any type of odorizer available on the market would suit our purposes. We discovered that while there are numerous types designed for odorizing the gas supplied to a large number of customers or to a large industrial customer, there were none manufactured that were proper for single domestic customers.

Accordingly we initiated in our laboratory a study of the various types of odorizers in an attempt to find one that would fulfill the requirements. The Proportional Flow Type where the odorant is dripped into the gas stream is impractical since the quantities of liquid handled are much too small for a feasible device. For example, if a domestic customer uses 50 M cu.ft. of gas per year, the quantity of Calodorant required for satisfactory odorization (at 3.0 gallons per M.M.) is .01 pints per month. Obviously such small quantities cannot be handled satisfactorily in any commercial type of apparatus. The needle valve opening would be so infinitesimal that plugging would occur within a very short time.

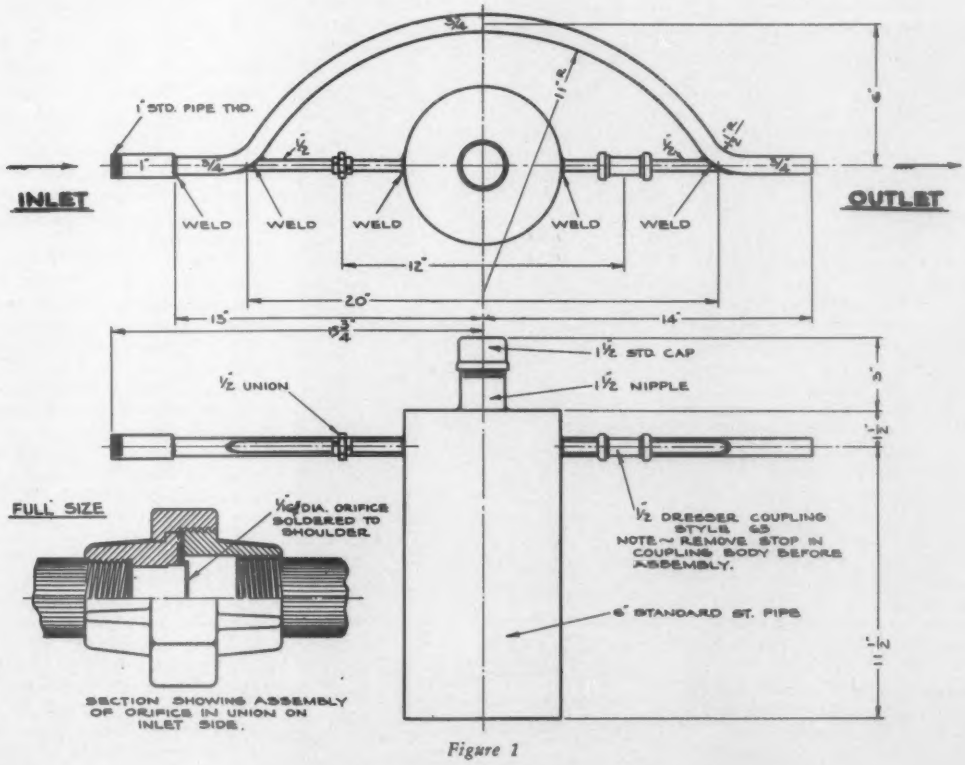


Figure 1

We investigated the Wick Type of odorizer since this eliminated the plugging difficulty. In the Wick Type we placed one end of the wick in a 1" tee through which the gas passed. The other end of the wick was connected to a storage container. Experiments were made with various types of wicking and with wicks of various sizes and diameters. The quantity of Calodorant used was determined by weighing the storage tank before and after a given quantity of gas had passed by the wick. After a considerable amount of study, it was found that the Wick Type odorizer was not satisfactory for our purposes since it did not even approximately fulfill our requirements.

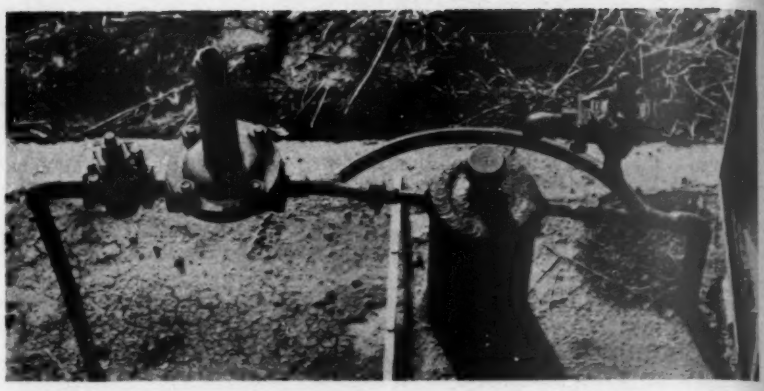


Figure 3

Figure 2

Figure 4

The difficulties we encountered were as follows:

1. There was a very pronounced tendency for dust and other materials to collect on the wick and thus reduce the rate of evaporation.
2. It was very difficult to control the evaporation from the wicks.
3. At low rates of flow the gas was over-odorized.

After our failure with the Wick Type, we directed our attention to the By-Pass Type. The operation of this type of odorizer depends upon the flow of a limited amount of gas through the odorizer where it is saturated with odorant and then returned to the main gas stream. We experimented with various types and designs and finally adopted the one shown in Figure 1.

It consists essentially of a piece of 6" standard steel pipe with a plate welded on the top and bottom and a 1½" nipple welded on the top. On the sides of the 6" pipe the ½" sweep gas line is welded, which in turn is connected to a ¾" bend. (This is made a part of the service line.) The union on the inlet side of the storage tank contains an aluminum disc with a $^{1}/_{32}$" orifice. The storage tank holds approximately one gallon of odorant which is more than adequate to odorize the gas for a year's period.

Our laboratory tests of this device indicate that the odorant used per million cubic feet of gas varies between 3 and 5 gallons with a gas flow of approximately 50 cu.ft. per hour. At low rates of flow there is a tendency to over-odorize. In the course of our study we felt that there might be some danger of plugging the orifice. To date no stoppage of this orifice has been encountered in the odorizers we have in service.

We install these odorizers at the transmission line on the downstream side of the field regulator. The outlet pressure of this regulator is 5 to 10 pounds per square inch and a pressure relief valve set for 20 lbs. is installed. Figure 2 shows an installation in the field. In this view the service from the transmission line, the field regulator, the odorizer and relief valve are shown. Figure 3 is another view of the same installation. The odorizer and regulator are covered with a dog house as shown in Figure 4. We have found occasions where it has been necessary to build a small pit for the regulator and odorizer, since the dog house is not particularly attractive in appearance.

We have had these devices in use for over a year and to date they have worked out satisfactorily. We have checked the odor present at the appliances and found that it is quite satisfactory with low flows and with maximum flows. The results of preliminary field tests to date indicate that the amount of odorant introduced into the gas is of the same order as obtained in our laboratory tests. The cost of one of these odorizers should not exceed $5 when they are manufactured in quantity production.

Distribution Engineers

Save These Dates

April 17-18-19, 1939

THE BIG EVENT of the year for the distribution men, the annual Distribution Conference of the Technical Section, will be held on the above dates at the Palmer House, Chicago, Illinois. A program of practical appeal, covering a wide range of subjects and supplemented by roundtable luncheon meetings, will be on tap for the visiting delegates. Make your plans now to attend and keep up-to-date on the latest engineering practice.

Has Faith in Gas

"I believe gas fuel has an essential and economically sound place in the development of our national economy and standard of living. Given a fair price alike to manufacturer and consumer, its use will be demanded to an ever-increasing extent, even though cheaper fuels may be available."—F. M. TERRY, Rate Engineer, Consolidated Edison Company of New York.

GAS AT WORLD'S FAIR

(Continued from page 88)

Another feature of the gas exhibit which will attract Fair visitors in general, and Fair ladies in particular, is: George Rector!—world famous restauranteur and authority on food.

Mr. Rector has a way with words, as well as with food. The two combine to make him a master chef, and a master of ceremonies. He'll function as both the World's Fair, where he is to be official host for the gas industry's exhibit.

Millions know Mr. Rector through his syndicated newspaper column, his frequent magazine articles and his radio appearance.

Millions more will come to know him personally as the result of the lectures and demonstrations he will give at the Fair on menus and manners (culinary). These will be presented daily in the auditorium of the exhibit group, and will at all times emphasize cooking by gas.

Souvenir Cook Books

Mr. Rector will also be on hand to autograph for all-comers the souvenir cook-book which he has prepared exclusively for the friends of the gas industry. The book is an "expose" of his own personal recipes.

All are practical, many are brand-new, some are Continental. Mr. Rector promises to show the ladies how to go home and do them with all the ease and expertness their modern gas kitchen appliances make possible.

The landscaping which Gas Exhibits, Incorporated, has planned will give added distinction to the gas exhibit. Dramatic effects will be achieved through the contrast of holly and American white birch. Newspapers have already publicized the two huge hollies (twins) which stand majestic guard over the "Court of Flame" gardens. Over 200 years old, they have a height of nearly forty feet in their "stocking feet," a branch spread of more than twenty feet. It is estimated that each tree bears three tons of berries each Christmas.

This, then, is the story of GAS at the New York World's Fair, the greatest story, the most golden opportunity the industry has ever had. (Later articles in the A. G. A. MONTHLY will describe manufacturers' exhibits in the Gas Industries Building and unusual applications of gas at the Fair—Editor.)

GAS INDUSTRY STABILITY

(Continued from page 90)

More than 744,000 gas water heaters were sold during 1938, and even better results are anticipated from the program of sales promotional efforts to be continued during 1939.

It is estimated that the total number of gas central house heating installations connected to the lines of all United States Gas companies in 1938 amounted to 825,000. In addition there were approximately 1,400,000 dwellings heated by unit heaters, space heaters, floor furnaces, etc., giving a total of more than 2,225,000 homes in the United States that are heated by gas.

The success of recent national cooperative sales campaigns, sponsored jointly by the gas utilities and the gas appliance manufacturers, has led to more aggressive campaign plans on the four principal domestic uses of gas—cooking, refrigeration, water heating and home heating during 1939. Closer coordination is being accomplished between these new campaigns and the industry's National Advertising Program, as well as the national sales programs of the individual gas appliance manufacturers.

The growth of acceptance of these national movements by gas companies insures their more effective use locally. Under the influence of all these factors, it is anticipated that the average annual consumption of gas per residential customer will assume substantially higher levels during the next few years, without considering the marked increases in the sale of gas for home heating.

The gas industry has, I believe, reason to look forward to the future with confidence, secure in the knowledge that through a continuation of its aggressive merchandising, sales promotional and advertising activities it will maintain and enhance its position as an indispensible factor in American economic life.

London Attacks Smoke Evil

The danger of smoke to life and health, to plants and buildings, was forcibly pointed out to Londoners recently by a dramatic exhibit of the National Smoke Abatement Society at Charing Cross Underground Station. The exhibit was organized by the Gas Light and Coke Company and was opened by Herbert Morrison, M.P. and Sir David Milne-Watson, governor of the company. The view shown above gives a general idea of how the exhibit was laid out. It contained a group of striking animated window displays which attracted much attention.

INVESTMENT PAMPHLET

(Continued from page 109)

earnings statement, surplus statement, balance sheet and audit certificate be approved by the certified public accountants before pamphlet is released.

Page No. 8—Capital Stock

Shares authorized, issued and outstanding; stated or par value of preferred and common stocks for a two year period.

Summarize Preferred Stock Rights, Preferences and Limitations as follows:

(1) Dividend Rights
(2) Voting Rights
(3) Liquidation Rights
(4) Subscription Rights
(5) Conversion Rights
(6) Redemption Provisions
(7) Dividend Record

Page No. 9—Long Term Debt

For each issue, name of bond and amount outstanding for a two year period; amount of bonds reacquired, cancelled, retired by sinking fund operations, or converted into stock by years.

Summary of Bond and Mortgage Provisions as follows:

(1) Date of Issue—Date Due
(2) Amount Authorized—Amount Issued
(3) Sinking Fund Provisions
(4) Maintenance and Renewal Fund Provisions
(5) Redemption
(6) Security
(7) Guaranty
(8) Additional Issues
(9) Modification
(10) Interest Rate
(11) Interest Payable—Date and Place
(12) Trustee
(13) Tax Provisions
(14) Denominations
(15) Purpose of Issue

Cover

Name of Company

(A Subsidiary of)

HISTORICAL, OPERATING AND FINANCIAL STATISTICS

Year.....

NOTE: The information herein contained is furnished upon your request and is not a representation or prospectus in respect of any stock or security, and is not furnished in connection with any sales or purchases of stocks and securities or other business transactions.

The advantages of preparing such a pamphlet are as follows:

(1) Basic data is prepared for the first pamphlet, thus making it unnecessary to refer to original sources of information for subsequent editions.
(2) All publishers have same information from which to write their story covering the company.
(3) Pamphlets are released simultaneously to all publishers, thereby eliminating a condition whereby one publisher has his data checked and revised ahead of another publisher.
(4) Considerable time and expense is saved by not having to check and revise each copy prepared by the various publishers, as upon completion of the pamphlet a sufficient number of copies may be made on a duplicating machine for the current year's work.

Gas

From the white heat of imprisoned fire
The clangor of steel and the hiss of steam
I come.
I am the heat of a million summers,
Hidden in coal and wrapped in oil.
Crushed in the fire-brick maw of the furnace,
Hammered with hammers of heat—
I am burned of the ash,
And stripped of the dross,
That come from my years in the earth.

I am the heat of a swollen sun
That shone on a steaming earth.

I was caught from the sun by the leaves of trees
That grew when the world was young.
And now from the jangle and crash of the making,
And the eerie howl of steam
I come as a maiden walking
In a pure blue dress of flame.

I dance in a million households
To please and to delight,
And I do the work of millions, in my dress of pure blue flame.

—ROBERT HOOPER
Brooklyn Borough Gas Company

Wm. R. Bradley Dies

WILLIAM R. BRADLEY, closely associated for a number of years with the Edgar Morris Sales Company of Washington, D. C., distributors of gas water heaters, ranges and other equipment, died January 28.

Mr. Bradley was born in Virginia and was formerly connected with the Roanoke Gas Light Company of Roanoke, Va. In 1918 he took up his residence in Washington, D. C., and since that time was in the employ of the Edgar Morris company.

Personnel Service

SERVICES OFFERED

Thoroughly experienced man with industrial and commercial gas **equipment manufacturer** desires change. Pacific Coast territory preferred. Excellent references. **1261.**

Would like to make a connection with **manufacturer** of gas burning equipment. Ten years' experience in the warm air heating field. Will travel, preferably the Southwest if possible. **1262.**

Engineer, superintendent, **manager**—graduate engineer experienced in design, construction and operation of gas properties, supplemented by recent experience in **valuation** of gas and other utilities—reproduction including inventory, pricing and cost set ups; original cost and continuing property records. Also recent experience in design of by-product recovery equipment. **1264.**

Gas Engineer, experienced in the design, construction, operation and valuation of manufactured and natural gas properties is open for permanent or temporary position. **1265.**

Industrial Heat Engineer, 27 years of age, technical graduate in heat engineering. Five years' experience on oil, gas, and electric industrial furnaces, seeks position along design, testing or sales-service lines. **1266.**

Eight years in charge street division distribution department and charge industrial department of large gas company. Previously in distribution department and charge fuel appliance laboratory of another large gas company. Last three years **selling, heating** and air-conditioning, surveys, heat loss calculations, etc. **1267.**

Manufacturers Representative (37) eighteen years' successful sales background with dealers and utilities, desires position, prefers Atlantic Seaboard, with reliable manufacturer domestic or hotel equipment. **1268.**

Sales Engineer, over fifteen years' experience in gas utilization field. Thoroughly familiar with all industrial heating problems. Reliable, ambitious, industrious. Opportunity to advance limited with present employer, where I have been employed nine years. Results can be demonstrated by sales records. Available on short notice. **1269.**

SERVICES OFFERED

Graduate mechanical engineer, theoretical training plus several years' practical work in **combustion.** Experienced in testing, designing, and developing all types of industrial and domestic gas burning equipment. Has worked with propane, butane, natural and manufactured gas. (28). **1270.**

Graduate engineer. Eleven years in gas industry and four years with leading equipment manufacturer. Strong **selling** and **engineering** background in gas house heating, air-conditioning, including refrigeration and silica gel dehydration, industrial gas. **1271.**

Househeating service man. Know all phases of the leading burner manufacturers' equipment; qualified to repair complete, install and service all controls; can write up service data on controls. Ten years' experience. Willing to go anywhere on trial basis. No selling. (29). **1272.**

Salesman—sixteen years varied, intensive selling experience in responsible positions with three top-flight specialty manufacturers, contacting gas companies, jobbers and consumers. Traveled United States, widely acquainted with gas company officials. Excellent personal selling record. Organized and directed many sales operations. Outstanding talent is for successful sales promotion. American, Protestant, 42, married, college graduate. **1273.**

Publicity Director, 70% releases accepted by newspapers, 1938 impacts total 64 million. Owe outstanding results to clear releases in simple language backed by broad engineering training and experience. Acquainted with methods of operation of large corporations. **1274.**

Combustion engineer—1937 gas engineering graduate—one and one-half years' experience in Oklahoma refinery which included manual labor, pipe fitting, insulating, machine shop practice, surveying, drafting, first aid instruction and an introduction to the refinery operations. **1275.**

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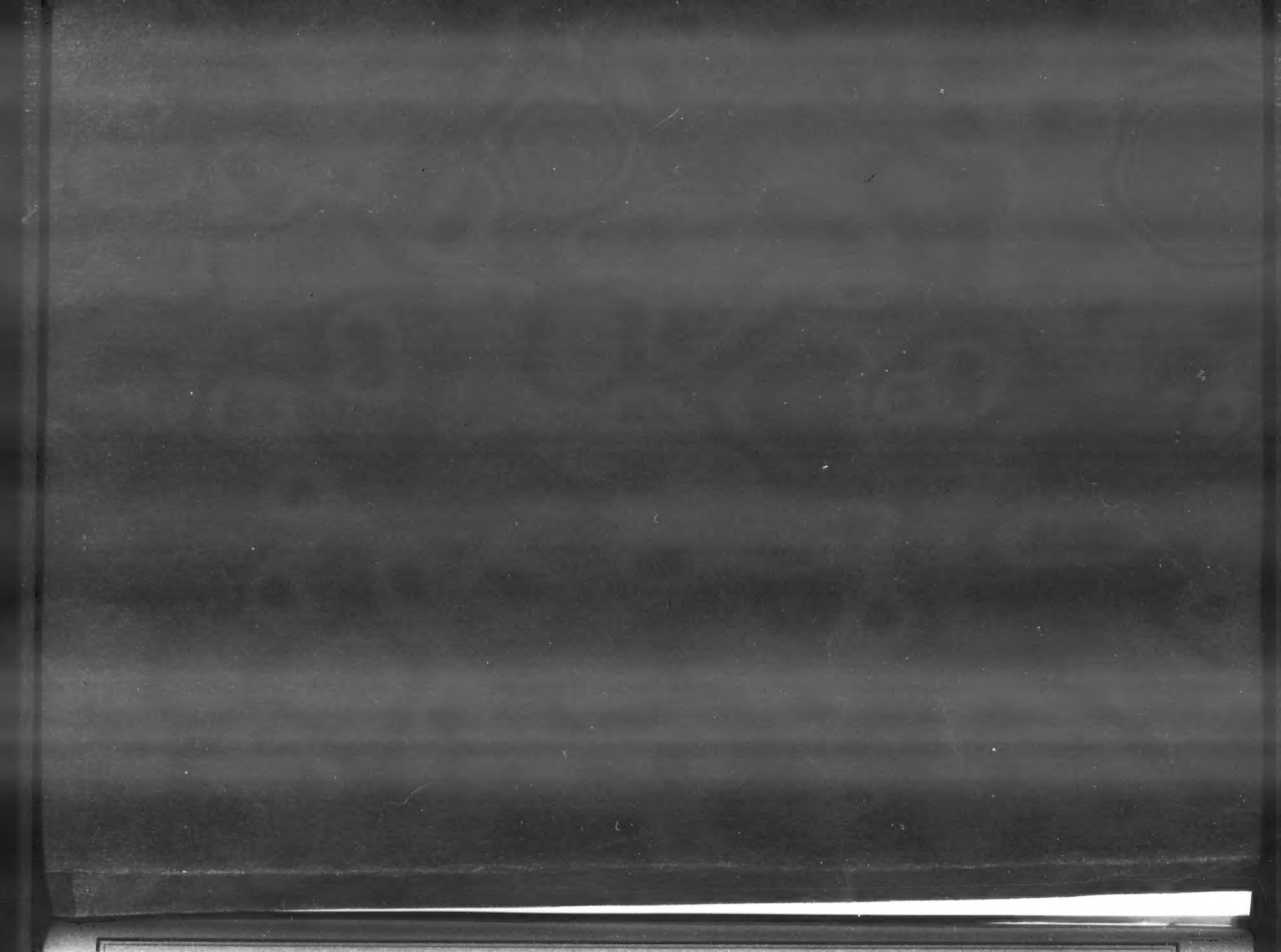
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